



Comprehensive Water and Sewer Utility Cost of Service Analysis

August 19, 2011



3013 Main Street
Kansas City, MO 64108
816-285-9020
www.raftelis.com

TABLE OF CONTENTS

EXECUTIVE SUMMARY	ES1
Section 1: Water Utility Description	
1.1 Water Utility System.....	1-1
1.2 The ASR Project.....	1-1
1.3 Operational and Financial Management Structure.....	1-1
1.4 Existing Water Rate Structures.....	1-2
Section 2: Water Utility Financial Plan	
2.1 Forecast of Billed Water Consumption.....	2-1
2.2 Forecast of Water Meters and Annual Bills.....	2-9
2.3 Forecast Water Rate Revenue at Existing Rates.....	2-9
2.4 Forecast Water CIP Expenditures and Financing.....	2-13
2.5 Forecast Water O&M Expenditures.....	2-13
2.6 Forecast Water Debt Service Expenditures.....	2-16
2.7 Forecast Water Non-Rate Revenues.....	2-16
2.8 Comprehensive Water Utility Financial Plan	2-18
2.9 Water Utility Revenue Requirement from Rates.....	2-20
Section 3: Water Utility Cost of Service Study	
3.1 Allocation of the O&M Revenue Requirement to Functional Activities.....	3-1
3.2 Classification of the O&M Revenue Requirement to Cost Components.....	3-1
3.3 Allocation of the Water Utility Assets to Functional Activities.....	3-5
3.4 Classification of Water Utility Assets and the Depreciation Revenue Requirement to Cost Components.....	3-5
3.5 Estimation of 2012 Customer Water Consumption Capacity Factors	3-8
3.6 Calculation of the Estimated Water Utility 2012 Units of Service.....	3-9
3.7 Calculation of the Forecast 2012 Water Utility Unit Costs of Service.....	3-12
3.8 Forecast 2012 Water Utility Revenue Requirement by Customer Class.....	3-12
Section 4: Water Utility Rate Design	
4.1 Volumetric Rate Design - Readiness-to-Serve Adjustment.....	4-1
4.2 Volumetric Rate Design - Cost Recovery in Each Consumption Block.....	4-3
4.3 Volumetric Rate Design - Inside City vs. Outside City Rate Differential.....	4-3
4.4 Volumetric Rate Design - Multi-Year Phase-In to Full Cost Rates for Selected Customer Rate Classes.....	4-3
4.5 Proposed 2012 Volumetric Rates.....	4-3
4.6 Monthly Fixed Charge Rate Design - Readiness-to-Serve Adjustment.....	4-5
4.7 Proposed 2012 Monthly Fixed Charges.....	4-6
4.8 Proposed 2012 Monthly Private Fire Connection Charges.....	4-9
Section 5: Water Utility Customer Bill Impacts.....	
	5-1

TABLE OF CONTENTS

Section 6: Sewer Utility Description

6.1 Sewer Utility System.....	6-1
6.2 Operational and Financial Management Structure.....	6-1
6.3 Existing Sewer Rate Structures.....	6-1

Section 7: Sewer Utility Financial Plan

7.1 Forecast of Billed Sewer Discharge Volumes.....	7-1
7.2 Forecast of Sewer Customer Water Meters and Annual Bills.....	7-2
7.3 Forecast Sewer Revenues at Existing Rates.....	7-2
7.4 Forecast Sewer CIP Expenditures and Financing.....	7-6
7.5 Forecast of Sewer O&M Expenditures.....	7-6
7.6 Forecast of Sewer Debt Service Expenditures.....	7-9
7.7 Forecast Sewer Non-Rate Revenues.....	7-9
7.8 Comprehensive Sewer Utility Financial Plan.....	7-11
7.9 Sewer Utility Revenue Requirement from Rates.....	7-13

Section 8: Sewer Utility Cost of Service Study

8.1 Allocation of the O&M Revenue Requirement to Functional Activities.....	8-1
8.2 Classification of the O&M Revenue Requirement to Cost Components.....	8-1
8.3 Allocation of the Sewer Utility Assets to Functional Activities.....	8-4
8.4 Classification of Sewer Utility Assets and the Depreciation Revenue Requirement to Cost Components...	8-4
8.5 Estimation of 2012 Sewer Utility Units of Service.....	8-7
8.6 Calculation of the Forecast 2012 Sewer Utility Unit Costs of Service.....	8-10
8.7 Forecast 2012 Sewer Utility Revenue Requirement by Customer Class.....	8-10

Section 9: Sewer Utility Rate Design

9.1 Monthly Fixed Charge Calculation.....	9-1
9.2 Proposed 2012 Monthly Fixed Charges.....	9-2
9.3 Volumetric Rate Design - Inside City vs. Outside City Rate Differential.....	9-4
9.4 Volumetric Rate Design - Multi-Year Phase-In to Full Cost Rates for Selected Customer Rate Classes.....	9-4
9.5 Proposed 2012 Volumetric Rates and Monthly Flat Rates.....	9-4
9.6 Proposed 2012 Extra Strength Surcharges.....	9-4

Section 10: Sewer Utility Customer Bill Impacts..... 10-1

Section 11: Combined Water and Sewer Utility Customer Bill Impacts..... 11-1

Section 12: Combined Water and Sewer Utility Overall Rate Revenue Increases..... 12-1

Section 13: Combined Water and Sewer Utility Debt Service Coverage Ratios..... 13-1

EXECUTIVE SUMMARY

In December 2010, the City of Wichita (City) retained the services of Raftelis Financial Consultants (RFC) to conduct a comprehensive cost of service analysis (COSA) for the water and sewer utilities operated by the City's Public Works & Utilities Department. The key objectives of the COSA included:

- Forecasting, for the period 2012 - 2021, the annual overall water and sewer rate revenue increases required to fund projected operating and capital expenditures, comply with revenue bond debt service coverage requirements, and maintain adequate financial reserves.
- Conducting a cost of service study to identify the proportional cost of providing water and sewer service to each customer class.
- Designing the City's water and sewer rate structures to increase customer class rate equity, reduce the potential for rate revenue volatility, and further the City's water conservation objectives.
- Calculating proposed 2012 water and sewer rates for consideration by the Wichita City Council (City Council) and forecasting water and sewer rates for the period 2013 - 2016.
- Creating a monthly pro forma financial modeling tool that allows City staff to compare budgeted and actual water and sewer revenues, operating cash flows, and debt service coverage ratios.

This executive summary highlights the principle findings and recommendations made by RFC. The following sections in the body of this report contain a detailed discussion of the findings and recommendations.

- Section 1: Water Utility Description
- Section 2: Water Utility Financial Plan
- Section 3: Water Utility Cost of Service Study
- Section 4: Water Utility Rate Design
- Section 5: Water Utility Customer Bill Impacts
- Section 6: Sewer Utility Description
- Section 7: Sewer Utility Financial Plan
- Section 8: Sewer Utility Cost of Service Study
- Section 9: Sewer Utility Rate Design
- Section 10: Sewer Utility Customer Bill Impacts
- Section 11: Combined Water and Sewer Utility Bill Impacts
- Section 12: Combined Water and Sewer Utility Overall Rate Revenue Increases
- Section 13: Combined Water and Sewer Utility Debt Service Coverage Ratios

Reasons for the COSA

The last water and sewer COSA was initiated in 2007 and completed in March 2008. Since that time, several events have caused the need for a new COSA that reviews the demand forecasting, financial planning, cost allocation, and rate design assumptions underlying the City's water and sewer rates.

- In 2008 and 2009, the City experienced wetter than normal climatic conditions during the summer irrigation season that, perhaps exacerbated by the downturn in economic conditions that began in September 2008, resulted in lower than anticipated water rate revenues and higher than anticipated water rate revenue volatility.
- During the period 2008 - 2010, combined water and sewer net capital assets grew by approximately 26% from \$792 million to over \$1.0 billion. Assets placed in service during this period include Phase I of the Aquifer Storage and Recovery (ASR) Project and the Mid-Continent Water Reclamation Facility.
- In March 2010, concerns regarding the adequacy of water and sewer revenues to meet revenue bond debt service coverage requirements prompted the City to create the Water Utilities Advisory Committee and to retain the services of HDR Engineering, Inc. (HDR), to conduct an independent third-party review of the water supply and financial planning assumptions underlying the ASR Project.
- In June 2010, after reviewing the HDR report and conferring with the Water Utilities Advisory Committee, the City Council authorized the issuance of \$200 million in general obligation notes to fund the completion of Phase II of the ASR Project. To insure compliance with revenue bond debt service coverage requirements, the City Council also adopted previously unplanned 7.5% water and 10% sewer rate increases effective on July 1, 2010, and 8% water and sewer rate increases that became effective on January 1, 2011.
- In January 2011, the City's water and sewer utility operations, which had previously been conducted through the Wichita Water Utilities Department, were consolidated with the Public Works Department to form the Public Works & Utilities Department. A total of eight positions were eliminated in this consolidation, including the position of the Director of the Wichita Water Utilities Department.

The COSA Process

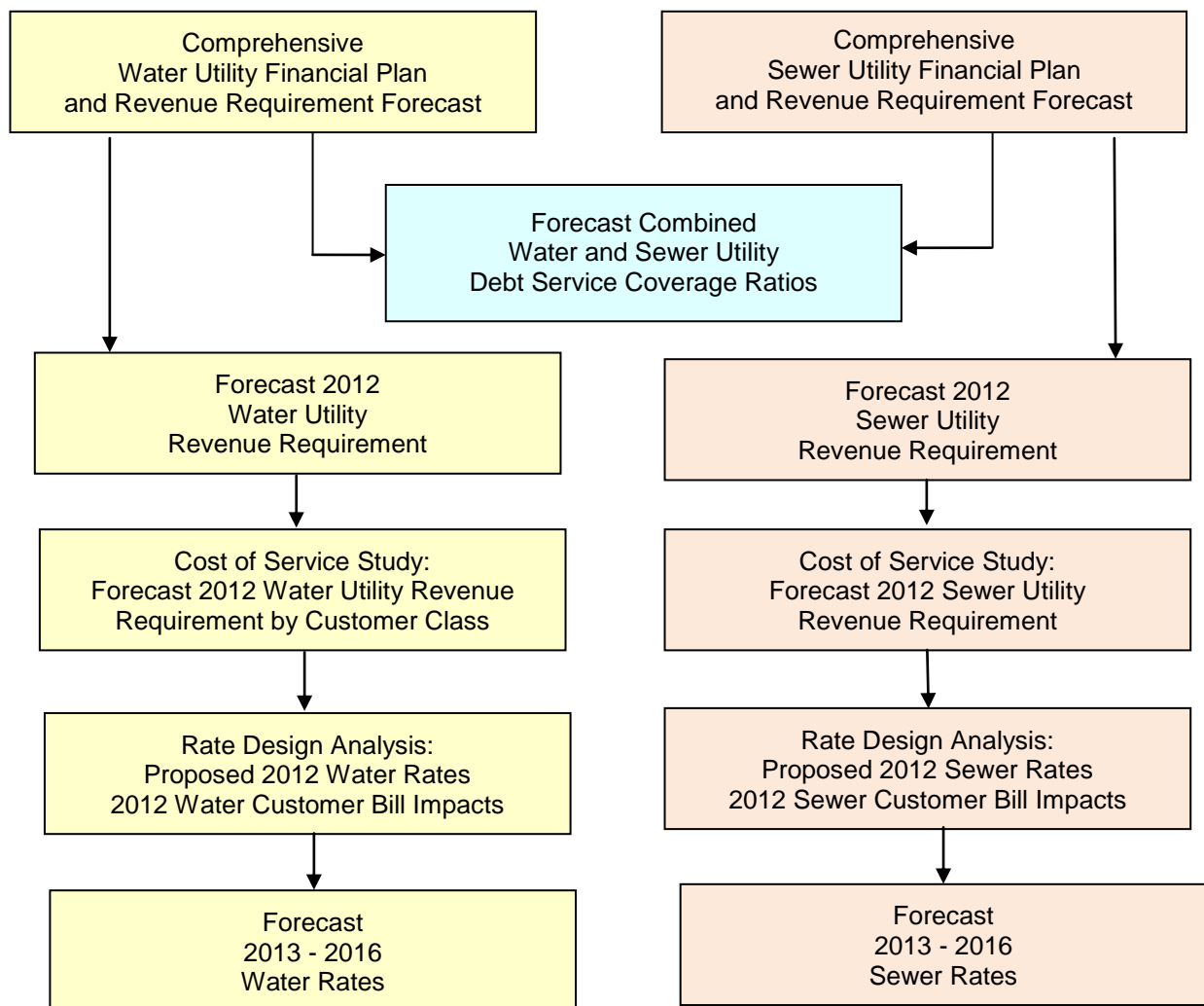
The first step in the COSA was the development of separate standalone financial plans for the City's water and sewer utilities. These financial plans forecast, during the period 2012 - 2021, the annual increase in rate revenues required to ensure Water Utility Fund and Sewer Utility Fund financial viability while minimizing inter-utility cross-subsidies (for example, water rate revenues supporting sewer utility-related costs). The revenue requirement is the amount of rate revenue required to fund the cost of operating expenditures, debt service expenditures, rate financed capital improvements, and the maintenance of adequate reserve balances. Alternatively, the revenue requirement can also be expressed as the amount of rate revenue required to fund the cost of operating expenditures and depreciation while providing an adequate rate of return on the assets constructed to provide utility service.

The second step in the COSA process was to conduct separate water and sewer cost of service studies to forecast the revenue requirement for each water and sewer customer rate class. The cost of service procedures followed by RFC during this process were based on industry standard methodologies as published by the American Water Works Association in the "Manual of Water Supply Practices M1, Principles of Water Rates, Fees, and Charges," and the Water Environment Federation in the "Manual of Practice No. 27, Financing and Charges for Wastewater Systems."

The third step in the COSA process was to conduct separate water and sewer rate design analyses to calculate proposed 2012 water and sewer rates and prepare a forecast of rates for the period 2013 - 2016. As it relates to water rates in particular, RFC worked with City staff to design rate structures that will result in full revenue requirement recovery while, to the maximum extent possible, achieving the objectives of mitigating revenue volatility, promoting water conservation, and minimizing customer bill impacts.

The final step in the COSA process was to forecast the impact the proposed 2012 water and sewer rates will have on customer bills. The diagram below provides a graphical representation of the COSA process utilized by RFC. A more detailed discussion of each step in the process can be found in Sections 1 - 13 of this report.

Water and Sewer Utility COSA Process



Water Utility Financial Plan

The water utility financial plan is discussed in detail in Section 2 of this report. Key highlights of the water utility financial plan are discussed below.

Billed Water Consumption: Approximately 35% of total water rate revenues are earned from discretionary outdoor irrigation consumption during the summer months. To minimize the potential to overestimate future water rate revenues, the forecast of billed water consumption underlying the water utility financial plan assumes that customers will use water in volumes equivalent to the average of their 2009 and 2010 consumption as opposed to the higher level of consumption experienced during the period 2001 - 2007 when climatic conditions were generally warmer and drier than normal.

The billed water consumption forecast also assumes an annual growth rate of 0.33% (one-third of one percent) for new residential, commercial, and special contract accounts during the period 2011 - 2021. Although this growth rate is less than actual experience prior to 2008, it is higher than actual experience in 2009 and 2010 when some customer classes saw a decline in aggregate customer accounts.

Actual billed water consumption in 2009 and 2010 was 17.58 and 18.16 billion gallons, respectively. Billed water consumption in the water utility financial plan is forecast to grow from 17.79 billion gallons in 2011 to 18.97 billion gallons in 2021.

Capital Improvement Program: Total inflation adjusted water capital improvement program (CIP) expenditures during the period 2011 - 2021 are forecast to be \$427.4 million. The forecast financing sources for these expenditures are unspent revenue bond proceeds of \$47.3 million, \$305.4 million in net revenue bond proceeds from new issues, and \$81.3 million of rate revenue pay-as-you-go financing generated from Water Utility Fund operating surpluses.

Operations and Maintenance Expenditures: Total inflation adjusted water operations and maintenance (O&M) expenditures during the period 2011 - 2021 are forecast to be \$483.9 million. The inflation rates used in the O&M forecast were developed in conjunction with City staff and reflect the operating efficiencies resulting from the consolidation of the Wichita Water Utilities Department into the Public Works Department.

Debt Service Expenditures: Total water debt service expenditures during the period 2011 - 2021 are forecast to be \$499.0 million. Debt service includes the 2010 and 2011 general obligation notes issued to fund ASR Phase II and the refinancing of those notes with long-term general obligation bonds in 2015.

Operating Surpluses: Water utility operating surpluses during the period 2011 - 2021 are forecast to be \$84.5 million. Of this amount, \$81.3 million is forecast to be transferred from the Water Utility Fund to finance CIP expenditures.

Water Utility Revenue Requirement from Rates: A summary forecast of the water utility financial plan and revenue requirement from rates for the period 2011 - 2016 is presented below. The forecast includes the annual required percentage increase in water rate revenues and forecast water utility standalone debt service coverage ratios. A detailed water utility financial plan for the period 2011 - 2021 is presented in Table 2-15 of this report.

Summary Water Utility Financial Plan (\$ Thousands)						
Metric	2011	2012	2013	2014	2015	2016
Water Rate Revenue % Increases	----	4.0%	5.0%	8.0%	8.0%	8.0%
Revenues						
Rate Revenue at 2011 Existing Rates	66,164.5	66,556.2	66,947.4	67,338.2	67,730.3	68,125.4
Revenue from Water Rate Increases	<u>0.0</u>	<u>2,662.2</u>	<u>6,159.2</u>	<u>12,077.8</u>	<u>18,538.4</u>	<u>25,588.3</u>
Total Revenue Requirement	\$66,164.5	\$69,218.5	\$73,106.5	\$79,416.0	\$86,268.7	\$93,713.7
Total Non-Rate Revenues	<u>4,076.5</u>	<u>4,111.2</u>	<u>4,116.5</u>	<u>4,121.8</u>	<u>4,127.1</u>	<u>4,132.4</u>
Total Revenues and Receipts	\$70,241.0	\$73,329.7	\$77,223.0	\$83,537.8	\$90,395.8	\$97,846.1
Expenditures						
Total O&M Expenditures	35,899.6	38,217.3	39,311.9	40,650.9	42,166.4	43,753.9
Total Revenue Bond Debt Service	25,389.5	26,348.0	28,093.0	31,055.5	33,457.9	35,374.9
Total GO Debt Service	<u>985.3</u>	<u>1,340.5</u>	<u>1,340.5</u>	<u>1,340.5</u>	<u>5,125.0</u>	<u>16,449.7</u>
Operating Surplus / (Deficit)	\$7,966.6	\$7,423.9	\$8,477.7	\$10,491.0	\$9,646.5	\$2,267.6
Transfer to Fund Water CIP	<u>7,500.0</u>	<u>7,100.0</u>	<u>8,300.0</u>	<u>10,200.0</u>	<u>9,400.0</u>	<u>2,000.0</u>
Remaining in the Water Utility Fund	\$466.6	\$323.9	\$177.7	\$291.0	\$246.5	\$267.6
Water Revenue Fund						
Beginning Balance	5,597.4	6,064.0	6,387.9	6,565.6	6,856.6	7,103.1
Add: Contribution	<u>466.6</u>	<u>323.9</u>	<u>177.7</u>	<u>291.0</u>	<u>246.5</u>	<u>267.6</u>
Ending Balance	\$6,064.0	\$6,387.9	\$6,565.6	\$6,856.6	\$7,103.1	\$7,370.7
Debt Service Coverage Ratio:						
Revenue Bonds	1.75	1.73	1.72	1.73	1.77	1.85
Revenue Bonds and GO Debt	1.68	1.65	1.64	1.66	1.54	1.26

Sewer Utility Financial Plan

The sewer utility financial plan is discussed in detail in Section 7 of this report. Key highlights of the sewer utility financial plan are discussed below.

Billed Sewer Discharge Volumes: Actual billed sewer discharge volumes in 2009 and 2010 were 11.57 and 11.53 billion gallons, respectively. Billed discharge volumes in the sewer utility financial plan are forecast to grow from 11.63 billion gallons in 2011 to 11.93 billion gallons in 2021.

Capital Improvement Program: Total inflation adjusted sewer CIP expenditures during the period 2011 - 2021 are forecast to be \$304.7 million. The forecast financing sources for these expenditures are unspent revenue bond proceeds of \$13.0 million, \$100.8 million in net revenue bond proceeds from new issues, \$158.7 million of net general obligation bond proceeds from new issues, and \$34.2 million of rate revenue pay-as-you-go financing generated from Sewer Utility Fund operating surpluses.

Operations and Maintenance Expenditures: Total inflation adjusted sewer operations and maintenance (O&M) expenditures during the period 2011 - 2021 are forecast to be \$343.2 million. The inflation rates used in the O&M forecast were developed in conjunction with City staff and reflect the operating efficiencies resulting from the consolidation of the Wichita Water Utilities Department with the Public Works Department.

Debt Service Expenditures: Total sewer debt service expenditures during the period 2011 - 2021 are forecast to be \$282.2 million. This includes debt service associated with general obligation bonds forecast to be issued during the period 2015 - 2021 to fund sewer treatment plant upgrades.

Operating Surpluses: Sewer utility operating surpluses during the period 2011 - 2021 are forecast to be \$36.3 million. Of this amount, \$34.2 million is forecast to be transferred from the Sewer Utility Fund to finance CIP expenditures.

Sewer Utility Revenue Requirement from Rates: A summary forecast of the sewer utility financial plan and revenue requirement from rates for the period 2011 - 2016 is presented below. The forecast includes the annual required percentage increase in sewer rate revenues and forecast sewer utility standalone debt service coverage ratios. A detailed sewer utility financial plan for the period 2011 - 2021 is presented in Table 7-14 of this report.

Summary Sewer Utility Financial Plan (\$ Thousands)						
Metric	2011	2012	2013	2014	2015	2016
Sewer Rate Revenue % Increases	----	9.0%	8.0%	7.0%	6.0%	5.0%
Revenues						
Rate Revenue at 2011 Existing Rates	39,902.9	40,027.7	40,152.0	40,276.3	40,402.8	40,530.7
Revenue from Sewer Rate Increases	0.0	3,602.5	7,114.9	10,455.9	13,542.2	16,290.9
Total Revenue Requirement	\$39,902.9	\$43,630.2	\$47,266.9	\$50,732.2	\$53,945.0	\$56,821.6
Total Non-Rate Revenues	3,206.5	3,343.5	3,349.1	3,354.7	3,360.3	3,365.9
Total Revenues and Receipts	\$43,109.3	\$46,973.7	\$50,616.0	\$54,086.9	\$57,305.3	\$60,187.5
Expenditures						
Total O&M Expenditures	26,272.0	27,586.6	27,792.1	28,821.4	29,872.2	30,941.1
Total Revenue Bond Debt Service	19,175.2	21,469.5	22,315.1	23,506.7	24,389.5	25,213.9
Total GO Debt Service	0.0	0.0	0.0	0.0	229.5	826.7
Operating Surplus / (Deficit)	(\$2,337.9)	(\$2,082.5)	\$508.9	\$1,758.8	\$2,814.1	\$3,205.8
Transfer to Fund Sewer CIP	0.0	0.0	0.0	0.0	0.0	2,700.0
Remaining in the Sewer Utility Fund	(\$2,337.9)	(\$2,082.5)	\$508.9	\$1,758.8	\$2,814.1	\$505.8
Sewer Revenue Fund						
Beginning Balance	4,030.2	1,692.3	(390.2)	118.7	1,877.4	4,691.5
Add: Contribution	(2,337.9)	(2,082.5)	508.9	1,758.8	2,814.1	505.8
Ending Balance	\$1,692.3	(\$390.2)	\$118.7	\$1,877.4	\$4,691.5	\$5,197.4
Debt Service Coverage Ratios						
Revenue Bonds	1.11	1.13	1.21	1.26	1.31	1.34
Revenue Bonds and GO Debt	1.11	1.13	1.21	1.26	1.29	1.30

Combined Water and Sewer Overall Rate Revenue Increases

The table below shows, for the period 2012 - 2016, the combined overall forecast annual rate revenue increases for the water and sewer utilities as calculated in the financial planning process. A forecast of combined water and sewer overall rate revenue increases for the period 2012 - 2021 is presented in Section 12 of this report.

Combined Water and Sewer Utility Overall Rate Revenue Increases						
Type of Rate Revenue Increase	2011	2012	2013	2014	2015	2016
Water Utility Overall Rate Revenue Increase	----	4.00%	5.00%	8.00%	8.00%	8.00%
Sewer Utility Overall Rate Revenue Increase	----	9.00%	8.00%	7.00%	6.00%	5.00%
Weighted Combined Overall Rate Revenue Increase	----	5.93%	6.18%	7.61%	7.23%	6.87%

Combined Water and Sewer Utility Fund Debt Service Coverage Ratios

The City issues revenue bonds to fund water and sewer utility capital improvements on a combined utility basis. As a result, compliance with revenue bond debt service coverage requirements is also measured on a combined Water Utility Fund and Sewer Utility Fund basis. The minimum revenue bond debt service coverage ratio necessary to maintain compliance with revenue bond covenants is 1.20. Below is a forecast of combined water and sewer debt service coverage ratios during the period 2011 - 2016. A more detailed forecast for the period 2011 - 2021 is presented in Table 12 of this report.

Combined Water and Sewer Utility Debt Service Coverage Ratios						
Type of Debt	2011	2012	2013	2014	2015	2016
Revenue Bonds	1.48	1.46	1.49	1.52	1.58	1.64
Revenue Bonds and General Obligation Debt	1.44	1.42	1.46	1.49	1.44	1.27

Proposed 2012 Water Rates

Sections 3 and 4 of this report contain a detailed discussion of the water cost of service study and the water rate design process. The tables below illustrate proposed 2012 water rates and forecast water rates for the period 2013 - 2014. Water rates retain the existing 60% pricing differential between inside city and outside city customers.

Water Utility Volumetric Rates							
Customer Class	\$ Rate per Thousand Gallons				Annual Percentage Increase		
	Existing 2011	Proposed 2012	Forecast 2013	Forecast 2014	Proposed 2012	Forecast 2013	Forecast 2014
Inside City Retail							
Block 1	\$1.43	\$1.52	\$1.63	\$1.81	6.29%	7.24%	11.04%
Block 2	\$5.42	\$5.49	\$5.87	\$6.38	1.29%	6.92%	8.69%
Block 3	\$8.15	\$8.29	\$8.56	\$9.32	1.72%	3.26%	8.88%
Inside City Special Contract	\$2.74	\$3.25	\$3.83	\$4.56	18.61%	17.85%	19.06%
Outside City Retail							
Block 1	\$2.29	\$2.44	\$2.61	\$2.90	6.55%	6.97%	11.11%
Block 2	\$8.68	\$8.79	\$9.40	\$10.21	1.27%	6.94%	8.62%
Block 3	\$13.05	\$13.27	\$13.70	\$14.92	1.69%	3.24%	8.91%
Outside City Special Contract	\$4.39	\$5.20	\$6.13	\$7.30	18.45%	17.88%	19.09%
Wholesale - Non-Potable	\$0.99	\$0.99	\$0.99	\$0.99	0.00%	0.00%	0.00%
Wholesale - Uniform Volume	\$2.01	\$2.27	\$2.60	\$3.00	12.94%	14.54%	15.38%
Wholesale							
Block 1	\$1.53	\$1.75	\$1.97	\$2.27	14.38%	12.57%	15.23%
Block 2	\$7.94	\$9.09	\$10.24	\$11.80	14.48%	12.65%	15.23%
Block 3	\$11.87	\$13.59	\$15.31	\$17.65	14.49%	12.66%	15.28%

Water Utility Monthly Fixed Charges							
Meter Size	\$ Monthly Charge per Bill				Annual Percentage Increase		
	Existing 2011	Proposed 2012	Forecast 2013	Forecast 2014	Proposed 2012	Forecast 2013	Forecast 2014
Inside City							
5/8"	\$11.18	\$11.49	\$11.62	\$11.83	2.77%	1.13%	1.81%
3/4"	\$11.25	\$11.49	\$11.62	\$11.83	2.13%	1.04%	1.81%
1"	\$11.49	\$11.49	\$11.62	\$11.83	0.00%	1.04%	1.81%
1-1/2"	\$11.82	\$12.61	\$13.45	\$14.34	6.68%	6.66%	6.62%
2"	\$12.68	\$13.98	\$15.41	\$16.99	10.25%	10.23%	10.25%
3"	\$19.23	\$21.83	\$24.78	\$28.13	13.52%	13.51%	13.52%
4"	\$21.66	\$25.59	\$30.23	\$35.71	18.14%	18.13%	18.13%
6"	\$27.30	\$33.86	\$41.99	\$52.07	24.03%	24.01%	24.01%
8"	\$33.75	\$42.46	\$53.42	\$67.21	25.81%	25.81%	25.81%
10"	\$37.80	\$49.30	\$64.29	\$83.84	30.42%	30.41%	30.41%
12"	\$46.67	\$61.98	\$82.31	\$109.31	32.80%	32.80%	32.80%
Outside City							
5/8"	\$17.89	\$18.39	\$18.60	\$18.93	2.79%	1.14%	1.77%
3/4"	\$17.99	\$18.39	\$18.59	\$18.92	2.22%	1.09%	1.78%
1"	\$18.38	\$18.39	\$18.59	\$18.92	0.05%	1.09%	1.78%
1-1/2"	\$18.90	\$20.18	\$21.52	\$22.95	6.77%	6.64%	6.64%
2"	\$20.29	\$22.37	\$24.66	\$27.19	10.25%	10.24%	10.26%
3"	\$30.77	\$34.93	\$39.65	\$45.01	13.52%	13.51%	13.52%
4"	\$34.65	\$40.95	\$48.37	\$57.14	18.18%	18.12%	18.13%
6"	\$43.68	\$54.18	\$67.19	\$83.32	24.04%	24.01%	24.01%
8"	\$54.00	\$67.94	\$85.48	\$107.54	25.81%	25.82%	25.81%
10"	\$60.47	\$78.88	\$102.87	\$134.15	30.44%	30.41%	30.41%
12"	\$74.68	\$99.17	\$131.70	\$174.90	32.79%	32.80%	32.80%
16"	\$196.54	\$252.65	\$324.79	\$417.52	28.55%	28.55%	28.55%

The residential and commercial customer bill impacts of the proposed 2012 water rates can be found in Section 5 of this report. Combined water and sewer customer bill impacts can be found in Section 11.

Proposed 2012 Sewer Rates

Sections 8 and 9 of this report contain a detailed discussion of the sewer cost of service study and the sewer rate design process. The tables below illustrate proposed 2012 sewer rates and sewer rates for the period 2013 - 2014. Sewer rates retain the existing 60% pricing differential between inside city and outside city customers.

Sewer Utility Volumetric Rates							
Customer Class	\$ Rate per Thousand Gallons				Annual Percentage Increase		
	Existing 2011	Proposed 2012	Forecast 2013	Forecast 2014	Proposed 2012	Forecast 2013	Forecast 2014
Inside City	\$2.47	\$2.70	\$2.91	\$3.09	9.31%	7.78%	6.19%
Outside City	\$3.96	\$4.32	\$4.66	\$4.95	9.09%	7.87%	6.22%
Wholesale	\$1.81	\$1.99	\$2.17	\$2.39	9.94%	9.05%	10.14%

Sewer Utility Monthly Fixed Charges							
Meter Size	\$ Monthly Charge per Bill				Annual Percentage Increase		
	Existing 2011	Proposed 2012	Forecast 2013	Forecast 2014	Proposed 2012	Forecast 2013	Forecast 2014
Inside City							
5/8"	\$5.13	\$5.89	\$6.76	\$7.76	14.81%	14.77%	14.79%
3/4"	\$5.61	\$6.25	\$6.96	\$7.75	11.41%	11.36%	11.35%
1"	\$7.11	\$7.33	\$7.55	\$7.78	3.09%	3.00%	3.05%
1-1/2"	\$9.22	\$10.33	\$11.57	\$12.96	12.04%	12.00%	12.01%
2"	\$14.81	\$16.15	\$17.61	\$19.20	9.05%	9.04%	9.03%
3"	\$56.20	\$56.20	\$56.20	\$56.20	0.00%	0.00%	0.00%
4"	\$71.48	\$71.48	\$71.48	\$71.48	0.00%	0.00%	0.00%
6"	\$107.26	\$114.99	\$123.27	\$132.15	7.21%	7.20%	7.20%
8"	\$148.09	\$161.13	\$175.31	\$190.74	8.81%	8.80%	8.80%
10"	\$173.65	\$209.60	\$252.99	\$305.36	20.70%	20.70%	20.70%
12"	\$229.83	\$287.52	\$359.69	\$449.98	25.10%	25.10%	25.10%
Outside City							
5/8"	\$8.20	\$9.43	\$10.82	\$12.42	15.00%	14.74%	14.79%
3/4"	\$8.98	\$10.00	\$11.14	\$12.40	11.36%	11.40%	11.31%
1"	\$11.38	\$11.73	\$12.08	\$12.45	3.08%	2.98%	3.06%
1-1/2"	\$14.76	\$16.53	\$18.52	\$20.74	11.99%	12.04%	11.99%
2"	\$23.69	\$25.84	\$28.18	\$30.72	9.08%	9.06%	9.01%
3"	\$89.91	\$89.92	\$89.92	\$89.92	0.01%	0.00%	0.00%
4"	\$114.36	\$114.37	\$114.37	\$114.37	0.01%	0.00%	0.00%
6"	\$171.62	\$183.99	\$197.24	\$211.44	7.21%	7.20%	7.20%
8"	\$236.95	\$257.81	\$280.50	\$305.19	8.80%	8.80%	8.80%
10"	\$277.84	\$335.36	\$404.79	\$488.58	20.70%	20.70%	20.70%
12"	\$367.73	\$460.04	\$575.51	\$719.97	25.10%	25.10%	25.10%

The residential and commercial customer bill impacts of the proposed 2012 sewer rates can be found in Section 10 of this report. Combined water and sewer customer bill impacts can be found in Section 11.

Section 1: Water Utility Description

1.1 Water Utility System

The water utility system serves the City, which has an estimated population of 382,366, several surrounding suburban areas, eight small incorporated communities, two rural water districts, and McConnell Air Force base. The City has two main sources of water supply. Cheney Reservoir, located 25 miles west of the City, provides up to 52,634 acre feet (AF) of annual withdrawal capacity and currently meets approximately 70% of annual raw water demand. The Equus Beds Wellfield, located approximately 25 miles northwest of the City, provides up to 40,000 AF of annual withdrawal capacity and currently meets approximately 30% of annual raw water demand. The City is also authorized to withdraw up to 17,561 AF from local well fields in the Arkansas River Aquifer. These well fields are used primarily to meet peak load demand.

The raw water supplies are transmitted to the Central Water Treatment Plant through an extensive system of collection system piping, pumps and transmission lines. The Central Water Treatment Plant has a maximum capacity of 160 million gallons (MGD) per day. Total treated water production in 2009 and 2010 was 19.9 billion gallons and 20.9 billion gallons, respectively. The City's treated water distribution system includes six pumping stations, including the Hess Pump Station which has a maximum capacity of 215 MGD. The distribution system also features approximately 49 million gallons of finished water storage and 2,300 miles of piping.

1.2 The ASR Project

The ASR Project is a critical component of the City's Integrated Local Water Supply Plan. The project involves pumping water out of the Little Arkansas River following periods of heavy rainfall, treating it to drinking-water quality, and injecting it into the Equus Beds Aquifer where it will be stored to meet the City's long-term water supply needs. The environmental benefit of this approach to water supply management is the creation of a hydraulic barrier against salt water contamination that threatens the aquifer.

The facilities associated with Phase I of the ASR project were placed in service during the period 2007 - 2010. Phase II of the ASR project, which will provide 30 MGD of aquifer recharge, is currently under construction and is expected to be completed in 2012 at a total cost of approximately \$250 million. Construction of Phase III and Phase IV of the ASR project is expected to be delayed until beyond 2020. When all four phases are fully implemented, the ASR project will be capable of storing 65 billion gallons of water and providing up to 100 MGD of supply. When coupled with the increased use of Cheney Reservoir, the ASR Project is expected to meet the water supply needs of 600,000 people through 2050.

1.3 Operational and Financial Management Structure

The operating divisions within the Public Works & Utilities Department that are directly responsible for the provision of water utility service are Water Administration, Water Customer Service (which also provides sewer utility customer service), Water Distribution, and Water Production and Pumping.

The City accounts for the operations of the water utility through the Water Utility Fund (Fund 540). The Controller's Office of the City's Department of Finance maintains separate accounts to manage water utility restricted cash reserves. They include the Water Utility Principal and Interest Account, the Water Utility Bond Reserve Account, and a separate Water Improvement Subaccount. The City funds water CIP expenditures through the Water Improvement Subaccount which receives the proceeds from debt issues and operating surpluses transferred from the Water Utility Fund. The City issues revenue bond debt to fund water and sewer utility capital improvements on a combined utility basis. As a result, compliance with the revenue bond debt service coverage requirements is also measured on a combined, Water Utility Fund and Sewer Utility Fund basis.

The Treasury Division maintains unrestricted operating cash reserves for the Water Utility Fund. Pursuant to the City's existing financial management policies, these reserves are equivalent to a maximum of 60-days of forecast operations and maintenance expenditures. Any excess cash generated by utility operations are transferred to the Water Improvement Subaccount to fund CIP expenditures as described above.

1.4 Existing Water Rate Structures

The City categorizes water service customers into twenty-one different customer classes based on attributes such as their location, premise type, service type and service level. For billing the volumetric portion of water bills, water customers are aggregated into the rate classes shown in Table 1-1 (Retail Water; Special Contracts; Wholesale Water - Uniform Volume; Wholesale Water; Wholesale Water - Non-Potable). The current pricing differential between the inside city and outside city water rates is 60%.

Table 1-1 2011 Water Utility Rate Structure			
Volumetric Rates (\$ per Thousand Gallons)			
Rate Class	Rate Structure	Inside City	Outside City
Retail Water (residential and commercial including lawn irrigation)	Block 1: Up to 110% of Avg. Winter Consumption	\$1.43	\$2.29
	Block 2: 111% - 310% of Avg. Winter Consumption	\$5.42	\$8.68
	Block 3: Above 310% of Avg. Winter Consumption	\$8.15	\$13.05
Special Contract	All Consumption Volumes	\$2.74	\$4.39
Wholesale Water - Uniform Volume	All Consumption Volumes	----	\$2.01
Wholesale Water	Block 1: Up to 110% of Avg. Winter Consumption	----	\$1.53
	Block 2: 111% - 310% of Avg. Winter Consumption		\$7.94
	Block 3: Above 3010% of Avg. Winter Consumption		\$11.87
Wholesale Water - Non-Potable	All Consumption Volumes	----	\$0.99
Monthly Fixed Charges (\$ per Bill)			
Meter Size		Inside City	Outside City
5/8"		\$11.18	\$17.89
3/4"		\$11.25	\$17.99
1"		\$11.49	\$18.38
1 1/2"		\$11.82	\$18.90
2"		\$12.68	\$20.29
3"		\$19.23	\$30.77
4"		\$21.66	\$34.65
6"		\$27.30	\$43.68
8"		\$33.75	\$54.00
10"		\$37.80	\$60.47
12"		\$46.67	\$74.68
16"		----	\$196.54
Private Fire Protection Charges (\$ per Bill)			
Connection Size		Inside City	Outside City
5/8"		\$3.43	\$5.48
3/4"		\$3.47	\$5.54
1"		\$3.60	\$5.76
1 1/2"		\$3.85	\$6.16
2"		\$4.44	\$7.12
3"		\$8.77	\$14.04
4"		\$10.39	\$16.62
6"		\$14.15	\$22.65
8"		\$18.43	\$29.49
10"		\$21.10	\$33.76
12"		\$27.01	\$43.22

Section 2: Water Utility Financial Plan

2.1 Forecast of Billed Water Consumption

In 2008 and 2009, the City experienced wetter and cooler than normal climatic conditions during the summer irrigation season which resulted in lower than anticipated billed water consumption. As a result, water rate revenues were also lower than anticipated and there was higher than anticipated monthly rate revenue volatility. Although demand rebounded slightly in 2010, it was still below the level experienced during the period 2001 - 2007 when climatic conditions were generally drier and warmer than normal.

Under the City's existing conservation water rate structure, roughly 35% of total water rate revenues derived from discretionary outdoor irrigation which takes place in consumption Block 2 (between 111% to 310% of average winter consumption) and consumption Block 3 (over 310% of average winter consumption). As a result, fluctuations in demand caused by non-normative summer season climatic conditions can cause volatility in water rate revenues. In the case of climatic conditions that are wetter or cooler than normal, this can potentially imperil the City's ability to comply with revenue bond debt service coverage requirements.

Water utilities can use three primary strategies to mitigate the revenue volatility caused by fluctuating climatic conditions. The first strategy is to implement a less aggressive conservation oriented rate structure in order to minimize their dependence on rate revenues earned from discretionary outdoor irrigation consumption. Given the City's historically strong commitment to water conservation, and based on consultations with City staff, RFC concluded that making radical changes to the existing rate structure was not appropriate. The second strategy is to accumulate large cash reserves which can be used for operating expenditures when water sales revenues are less than anticipated. Based on our consultations with City staff, RFC concluded that this strategy would be inappropriate in light of the City's existing financial management policy which allows a maximum unrestricted cash reserve equivalent to 60-days of forecast O&M expenditures in the Water Utility Fund.

The third strategy to mitigate revenue volatility, and the one utilized by RFC, is to develop a financial plan featuring a forecast of billed water consumption based on "realistically achievable" assumptions regarding customer water demand. RFC's forecast of billed water consumption assumes that most customers will consume water at a volume equivalent to their 2009 and 2010 consumption as opposed to the higher level of consumption experienced during the period 2001 - 2007. The forecast also assumes an annual growth rate of 0.33% (one-third of one percent) for new residential, commercial, and special contract accounts during the period 2011 - 2021. Although this growth rate is less than actual experience prior to 2008, it is higher than actual experience in 2009 and 2010 when some customer classes saw a decline in aggregate customer accounts.

The first step required to forecast billed water consumption is to determine historical billed consumption. Table 2-1 shows an estimate of actual billed water consumption for each customer class during the period 2006 - 2010.

Table 2-1
Estimated Billed Water Consumption 2006 - 2010 (Gallons)

Rate	Type	Customer Description	2006	2007	2008	2009	2010
RSWI	RWTR	Residential Water Inside City - Domestic	10,307,760,860	9,205,745,510	8,643,520,084	8,727,538,650	9,031,587,850
RSWI	RLWN	Residential Water Inside City - Lawn	3,936,000	2,956,500	1,581,516	1,609,620	2,666,250
COWI	CWTR	Commercial Water Inside City - Domestic	6,005,720,220	5,705,567,490	5,586,981,300	5,298,026,430	5,235,554,800
COWI	CWNA	Commercial Water Inside City - No Sewer	285,056,250	245,642,250	242,343,000	214,895,250	164,025,750
COWI	FDCV	Commercial Water Inside City - Fire Department	92,250	17,250	9,750	0	0
COWI	CLWN	Commercial Water Inside City - Lawn	232,790,250	166,725,000	122,232,750	139,887,951	185,758,736
RVCI	RVCT	Special Contract Inside City	<u>450,476,250</u>	<u>327,135,750</u>	<u>234,897,750</u>	<u>231,810,000</u>	<u>363,325,500</u>
		Total Inside City	17,285,832,080	15,653,789,750	14,831,566,150	14,613,767,901	14,982,918,886
RSWO	RWTR	Residential Water Outside City - Domestic	317,465,250	265,014,750	220,689,750	217,575,000	248,283,750
ARWA	RWTR	Andover Residential Water - Domestic	297,279,750	277,401,000	266,066,250	272,631,000	301,086,000
RSWO	RLWN	Residential Water Outside City - Lawn	1,866,000	1,026,750	576,000	671,250	1,000,500
ARWA	RLWN	Andover Residential Water - Lawn	149,250	39,750	643,500	294,750	65,250
COWO	CWTR	Commercial Water Outside City - Domestic	1,095,599,250	1,104,355,530	1,029,742,500	844,496,250	945,767,250
COWO	CWNA	Commercial Water Outside City - No Sewer	71,144,250	85,136,250	105,813,000	123,885,000	67,051,500
COWO	FDCV	Commercial Water Outside City - Fire Department	0	0	34,500	0	0
COWO	CLWN	Commercial Water Outside City - Lawn	7,976,250	1,589,250	1,362,750	2,007,000	1,328,250
ACWA	CWTR	Andover Commercial Water - Domestic	103,599,000	110,978,250	103,141,500	109,129,500	116,358,750
ACWA	CLWN	Andover Commercial Water - Lawn	4,281,000	3,672,750	2,755,500	4,243,500	5,295,750
RVCO	RVCT	Special Contract Outside City	<u>30,904,500</u>	<u>10,403,250</u>	<u>3,782,250</u>	<u>4,782,000</u>	<u>12,504,000</u>
		Total Outside City	1,930,264,500	1,859,617,530	1,734,607,500	1,579,715,250	1,698,741,000
NPWW	WHOW	Non-Potable Water Wholesale	11,431,500	11,390,250	9,875,250	11,415,000	10,044,750
UWVR	WHOW	Uniform Wholesale Volume	0	754,119,750	577,963,500	825,723,750	905,746,500
WHOW	WHOW	Wholesale Water	<u>1,441,613,250</u>	<u>616,689,750</u>	<u>769,075,500</u>	<u>549,551,250</u>	<u>560,667,000</u>
		Total Wholesale	1,453,044,750	1,382,199,750	1,356,914,250	1,386,690,000	1,476,458,250
		Total Water Utility	20,669,141,330	18,895,607,030	17,923,087,900	17,580,173,151	18,158,118,136

The second step required to forecast billed water consumption is to determine the historical number of accounts for each customer class. Table 2-2 shows an estimate of actual customer accounts during the period 2006 - 2010.

Rate	Type	Customer Description	2006	2007	2008	2009	2010
RSWI	RWTR	Residential Water Inside City - Domestic	117,973	120,377	122,536	122,983	121,798
RSWI	RLWN	Residential Water Inside City - Lawn	148	120	90	82	81
COWI	CWTR	Commercial Water Inside City - Domestic	12,522	12,351	12,482	12,440	11,035
COWI	CWNA	Commercial Water Inside City - No Sewer	14	11	11	9	8
COWI	FDCV	Commercial Water Inside City - Fire Department	13	14	16	23	20
COWI	CLWN	Commercial Water Inside City - Lawn	2,654	2,632	2,428	2,658	2,665
RVCI	RVCT	Special Contract Inside City	<u>356</u>	<u>357</u>	<u>358</u>	<u>362</u>	<u>356</u>
		Total Inside City	133,680	135,862	137,921	138,557	135,963
RSWO	RWTR	Residential Water Outside City - Domestic	3,009	3,080	2,735	2,758	2,931
ARWA	RWTR	Andover Residential Water - Domestic	2,894	3,145	3,014	3,163	3,173
RSWO	RLWN	Residential Water Outside City - Lawn	22	18	16	21	22
ARWA	RLWN	Andover Residential Water - Lawn	8	7	15	13	7
COWO	CWTR	Commercial Water Outside City - Domestic	169	161	157	159	148
COWO	CWNA	Commercial Water Outside City - No Sewer	2	2	3	3	2
COWO	FDCV	Commercial Water Outside City - Fire Department	0	0	0	1	1
COWO	CLWN	Commercial Water Outside City - Lawn	87	75	65	91	90
ACWA	CWTR	Andover Commercial Water - Domestic	255	262	249	262	241
ACWA	CLWN	Andover Commercial Water - Lawn	71	79	104	111	117
RVCO	RVCT	Special Contract Outside City	<u>26</u>	<u>25</u>	<u>23</u>	<u>21</u>	<u>21</u>
		Total Outside City	6,543	6,854	6,381	6,603	6,753
NPWW	WHOW	Non-Potable Water Wholesale	0	1	1	1	1
UWVR	WHOW	Uniform Wholesale Volume	0	5	2	3	3
WHOW	WHOW	Wholesale Water	<u>12</u>	<u>16</u>	<u>7</u>	<u>7</u>	<u>7</u>
		Total Wholesale	12	22	10	11	11
		Total Water Utility	140,235	142,738	144,312	145,171	142,727

The third step required to forecast billed water consumption is to calculate, on a per account basis, the historical annual average billed water consumption for each customer class. Table 2-3 shows an estimate of average consumption per account during the period 2006 - 2010. Also shown in Table 2-3 are the average consumption per account estimates used to create the billed water consumption forecast underlying the water utility financial plan. RFC's forecast of billed water consumption assumes, that in the majority of cases, each customer class will consume water at a volume equivalent to their 2009 and 2010 consumption as opposed to the higher level of demand experienced prior to 2008.

Table 2-3
Estimated Annual Average Billed Water Consumption per Account 2006 - 2010 (Gallons)

Rate	Type	Customer Description	5-Year Average 2006 - 2010	4-Year Average 2007 - 2010	3-Year Average 2008 - 2010	2-Year Average 2009 - 2010	1- Year Estimated Actual 2010	Used in the Water Financial Plan
RSWI	RWTR	Residential Water Inside City - Domestic	75,901	73,033	71,885	72,559	74,152	72,559
RSWI	RLWN	Residential Water Inside City - Lawn	24,270	23,689	23,373	26,273	32,917	26,273
COWI	CWTR	Commercial Water Inside City - Domestic	457,901	452,473	449,313	450,168	474,450	462,309
COWI	CWNA	Commercial Water Inside City - No Sewer	21,820,785	22,185,691	22,137,217	22,190,234	20,503,219	22,190,234
COWI	FDCV	Commercial Water Inside City - Fire Department	1,788	460	203	0	0	0
COWI	CLWN	Commercial Water Inside City - Lawn	64,747	59,005	57,558	61,166	69,703	61,166
RVCI	RVCT	Special Contract Inside City	899,761	808,355	772,358	830,468	1,020,577	830,468
RSWO	RWTR	Residential Water Outside City - Domestic	87,168	82,583	81,430	81,799	84,710	81,799
ARWA	RWTR	Andover Residential Water - Domestic	92,057	89,391	89,787	90,542	94,890	90,542
RSWO	RLWN	Residential Water Outside City - Lawn	51,060	42,621	37,814	38,721	45,477	38,721
ARWA	RLWN	Andover Residential Water - Lawn	19,846	20,143	24,965	15,997	9,321	15,997
COWO	CWTR	Commercial Water Outside City - Domestic	6,320,535	6,279,959	6,086,829	5,850,808	6,390,319	6,320,535
COWO	CWNA	Commercial Water Outside City - No Sewer	37,646,400	38,164,969	36,697,250	37,410,375	33,525,750	37,410,375
COWO	FDCV	Commercial Water Outside City - Fire Department	0	0	0	0	0	0
COWO	CLWN	Commercial Water Outside City - Lawn	34,130	19,742	19,260	18,407	14,758	18,407
ACWA	CWTR	Andover Commercial Water - Domestic	428,683	434,286	437,855	449,671	482,816	449,671
ACWA	CLWN	Andover Commercial Water - Lawn	43,355	39,120	36,663	41,746	45,263	41,746
RVCO	RVCT	Special Contract Outside City	518,471	350,930	329,196	411,571	595,429	411,571
NPWW	WHOW	Non-Potable Water Wholesale	0	10,681,313	10,445,000	10,729,875	10,044,750	10,387,313
UWVR	WHOW	Uniform Wholesale Volume	0	254,240,613	288,712,833	288,578,375	301,915,500	288,578,375
WHOW	WHOW	Wholesale Water	85,429,617	76,753,411	89,490,179	79,301,304	80,095,286	79,301,304

The fourth step required to forecast billed water consumption is to estimate demand by consumption block. To achieve this objective, RFC analyzed the 2009 and 2010 monthly consumption patterns for each customer rate class and calculated a weighted average estimate of annual consumption by block during this two-year period. Table 2-4 illustrates the results of this analysis.

Rate	Type	Customer Description	Consumption Block 1	Consumption Block 2	Consumption Block 3
RSWI	RWTR	Residential Water Inside City - Domestic	77.56%	16.59%	5.85%
RSWI	RLWN	Residential Water Inside City - Lawn	25.18%	30.78%	44.04%
COWI	CWTR	Commercial Water Inside City - Domestic	79.12%	14.46%	6.42%
COWI	CWNA	Commercial Water Inside City - No Sewer	92.33%	7.66%	0.01%
COWI	CLWN	Commercial Water Inside City - Lawn	13.83%	15.29%	70.88%
RVCI	RVCT	Special Contract Inside City	100.00%	----	----
RSWO	RWTR	Residential Water Outside City - Domestic	72.62%	18.22%	9.16%
ARWA	RWTR	Andover Residential Water - Domestic	73.28%	20.04%	6.68%
RSWO	RLWN	Residential Water Outside City - Lawn	27.76%	28.63%	43.61%
ARWA	RLWN	Andover Residential Water - Lawn	34.23%	32.03%	33.73%
COWO	CWTR	Commercial Water Outside City - Domestic	83.29%	15.92%	0.79%
COWO	CWNA	Commercial Water Outside City - No Sewer	82.68%	17.32%	0.00%
COWO	CLWN	Commercial Water Outside City - Lawn	42.02%	24.26%	33.72%
ACWA	CWTR	Andover Commercial Water - Domestic	77.28%	14.85%	7.87%
ACWA	CLWN	Andover Commercial Water - Lawn	20.26%	23.22%	56.51%
RVCO	RVCT	Special Contract Outside City	100.00%	----	----
NPWW	WHOW	Non-Potable Water Wholesale	100.00%	----	----
UWVR	WHOW	Uniform Wholesale Volume	100.00%	----	----
WHOW	WHOW	Wholesale Water	95.42%	4.58%	0.00%

The fifth step required to forecast billed water consumption is to forecast the number of customer accounts during each year of the 2011 - 2021 planning horizon. Table 2-5 shows this forecast, which, as discussed previously, assumes an annual growth rate of 0.33% (one-third of one percent) for new residential, commercial, and special contract accounts.

The final step required to forecast billed water consumption is to multiply the estimated annual average billed consumption per account as derived in Table 2-3, by the forecast number of water service accounts derived in Table 2-5. This results in an aggregate annual forecast of billed consumption for each customer class. For those customer classes where it is appropriate, the forecast aggregate annual billed consumption must be allocated to each consumption block based on the data derived in Table 2-4. The final forecast of billed water consumption resulting from this process is shown in Table 2-6.

Table 2-5
Forecast Water Customer Accounts 2011 - 2021

Rate	Type	Customer Description	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
RSWI	RWTR	Residential Water Inside City - Domestic	122,200	122,604	123,009	123,415	123,823	124,232	124,642	125,054	125,467	125,882	126,298
RSWI	RLWN	Residential Water Inside City - Lawn	82	83	84	85	86	87	88	89	90	91	92
COWI	CWTR	Commercial Water Inside City - Domestic	11,072	11,109	11,146	11,183	11,220	11,258	11,296	11,334	11,372	11,410	11,448
COWI	CWNA	Commercial Water Inside City - No Sewer	9	10	11	12	13	14	15	16	17	18	19
COWI	FDCV	Commercial Water Inside City - Fire Dept.	20	20	20	20	20	20	20	20	20	20	20
COWI	CLWN	Commercial Water Inside City - Lawn	2,674	2,683	2,692	2,701	2,710	2,719	2,728	2,738	2,748	2,758	2,768
RVCI	RVCT	Special Contract Inside City	<u>358</u>	<u>360</u>	<u>362</u>	<u>364</u>	<u>366</u>	<u>368</u>	<u>370</u>	<u>372</u>	<u>374</u>	<u>376</u>	<u>378</u>
		Total Inside City	136,415	136,869	137,324	137,780	138,238	138,698	139,159	139,623	140,088	140,555	141,023
RSWO	RWTR	Residential Water Outside City - Domestic	2,941	2,951	2,961	2,971	2,981	2,991	3,001	3,011	3,021	3,031	3,042
ARWA	RWTR	Andover Residential Water - Domestic	3,184	3,195	3,206	3,217	3,228	3,239	3,250	3,261	3,272	3,283	3,294
RSWO	RLWN	Residential Water Outside City - Lawn	23	24	25	26	27	28	29	30	31	32	33
ARWA	RLWN	Andover Residential Water - Lawn	8	9	10	11	12	13	14	15	16	17	18
COWO	CWTR	Commercial Water Outside City - Domestic	149	150	151	152	153	154	155	156	157	158	159
COWO	CWNA	Commercial Water Outside City - No Sewer	3	4	5	6	7	8	9	10	11	12	13
COWO	FDCV	Commercial Water Outside City - Fire Dept.	1	1	1	1	1	1	1	1	1	1	1
COWO	CLWN	Commercial Water Outside City - Lawn	91	92	93	94	95	96	97	98	99	100	101
ACWA	CWTR	Andover Commercial Water - Domestic	242	243	244	245	246	247	248	249	250	251	252
ACWA	CLWN	Andover Commercial Water - Lawn	118	119	120	121	122	123	124	125	126	127	128
RVCO	RVCT	Special Contract Outside City	<u>22</u>	<u>23</u>	<u>24</u>	<u>25</u>	<u>26</u>	<u>27</u>	<u>28</u>	<u>29</u>	<u>30</u>	<u>31</u>	<u>32</u>
		Total Outside City	6,782	6,811	6,840	6,869	6,898	6,927	6,956	6,985	7,014	7,043	7,073
NPWW	WHOW	Non-Potable Water Wholesale	1	1	1	1	1	1	1	1	1	1	1
UWVR	WHOW	Uniform Wholesale Volume	3	3	3	3	3	3	3	3	3	3	3
WHOW	WHOW	Wholesale Water	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>
		Total Wholesale	11	11	11	11	11	11	11	11	11	11	11
		Total Combined System	143,208	143,691	144,175	144,660	145,147	145,636	146,126	146,619	147,113	147,609	148,107

Table 2-6
Forecast Billed Water Consumption 2011 - 2021 (Millions of Gallons)

Description	Block	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Residential Water Inside City - Domestic	Block 1	6,876.8	6,899.5	6,922.3	6,945.2	6,968.1	6,991.2	7,014.2	7,037.4	7,060.7	7,084.0	7,107.4
	Block 2	1,471.3	1,476.2	1,481.1	1,486.0	1,490.9	1,495.8	1,500.7	1,505.7	1,510.7	1,515.7	1,520.7
	Block 3	<u>518.5</u>	<u>520.3</u>	<u>522.0</u>	<u>523.7</u>	<u>525.4</u>	<u>527.2</u>	<u>528.9</u>	<u>530.7</u>	<u>532.4</u>	<u>534.2</u>	<u>535.9</u>
	Total	8,866.7	8,896.0	8,925.4	8,954.8	8,984.4	9,014.1	9,043.9	9,073.8	9,103.7	9,133.8	9,164.0
Residential Water Inside City – Lawn	Block 1	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Block 2	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
	Block 3	<u>0.9</u>	<u>1.0</u>	<u>1.0</u>	<u>1.0</u>	<u>1.0</u>	<u>1.0</u>	<u>1.0</u>	<u>1.0</u>	<u>1.0</u>	<u>1.1</u>	<u>1.1</u>
	Total	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.4	2.4	2.4
Commercial Water Inside City - Domestic	Block 1	4,050.0	4,063.6	4,077.1	4,090.6	4,104.2	4,118.1	4,132.0	4,145.9	4,159.8	4,173.7	4,187.6
	Block 2	740.2	742.7	745.2	747.6	750.1	752.7	755.2	757.7	760.3	762.8	765.4
	Block 3	<u>328.4</u>	<u>329.5</u>	<u>330.6</u>	<u>331.7</u>	<u>332.8</u>	<u>333.9</u>	<u>335.1</u>	<u>336.2</u>	<u>337.3</u>	<u>338.5</u>	<u>339.6</u>
	Total	5,118.7	5,135.8	5,152.9	5,170.0	5,187.1	5,204.7	5,222.2	5,239.8	5,257.4	5,274.9	5,292.5
Commercial Water Inside City - No Sewer	Block 1	184.4	204.9	225.4	245.9	266.4	286.8	307.3	327.8	348.3	368.8	389.3
	Block 2	15.3	17.0	18.7	20.4	22.1	23.8	25.5	27.2	28.9	30.6	32.3
	Block 3	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
	Total	184.4	204.9	225.4	245.9	266.4	286.8	307.3	327.8	348.3	368.8	389.3
Commercial Water Inside City - Lawn	Block 1	22.6	22.7	22.8	22.8	22.9	23.0	23.1	23.2	23.2	23.3	23.4
	Block 2	25.0	25.1	25.2	25.3	25.3	25.4	25.5	25.6	25.7	25.8	25.9
	Block 3	<u>115.9</u>	<u>116.3</u>	<u>116.7</u>	<u>117.1</u>	<u>117.5</u>	<u>117.9</u>	<u>118.3</u>	<u>118.7</u>	<u>119.1</u>	<u>119.6</u>	<u>120.0</u>
	Total	163.6	164.1	164.7	165.2	165.8	166.3	166.9	167.5	168.1	168.7	169.3
Special Contract	Total	297.3	299.0	300.6	302.3	304.0	305.6	307.3	308.9	310.6	312.3	313.9
Total Inside City Consumption		14,648.1	14,718.9	14,789.9	14,860.9	14,932.0	15,003.7	15,075.4	15,147.4	15,219.4	15,291.6	15,363.8
Residential Water Outside City - Domestic	Block 1	174.7	175.3	175.9	176.5	177.1	177.7	178.3	178.9	179.5	180.1	180.7
	Block 2	43.8	44.0	44.1	44.3	44.4	44.6	44.7	44.9	45.0	45.2	45.3
	Block 3	<u>22.0</u>	<u>22.1</u>	<u>22.2</u>	<u>22.3</u>	<u>22.3</u>	<u>22.4</u>	<u>22.5</u>	<u>22.5</u>	<u>22.6</u>	<u>22.7</u>	<u>22.8</u>
	Total	240.6	241.4	242.2	243.0	243.8	244.7	245.5	246.3	247.1	247.9	248.8
Andover Residential Water - Domestic	Block 1	211.3	212.0	212.7	213.4	214.2	214.9	215.6	216.4	217.1	217.8	218.6
	Block 2	57.8	58.0	58.2	58.4	58.6	58.8	59.0	59.2	59.4	59.6	59.8
	Block 3	<u>19.3</u>	<u>19.3</u>	<u>19.4</u>	<u>19.5</u>	<u>19.5</u>	<u>19.6</u>	<u>19.7</u>	<u>19.7</u>	<u>19.8</u>	<u>19.9</u>	<u>19.9</u>
	Total	288.3	289.3	290.3	291.3	292.3	293.3	294.3	295.3	296.3	297.2	298.2
Residential Water Outside City - Lawn	Block 1	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4
	Block 2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4
	Block 3	<u>0.4</u>	<u>0.4</u>	<u>0.4</u>	<u>0.4</u>	<u>0.5</u>	<u>0.5</u>	<u>0.5</u>	<u>0.5</u>	<u>0.5</u>	<u>0.5</u>	<u>0.6</u>
	Total	0.9	0.9	1.0	1.0	1.0	1.1	1.1	1.2	1.2	1.2	1.3

Table 2-6 - Continued
Forecast Billed Water Consumption 2011 - 2021 (Millions of Gallons)

Description	Block	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Andover Residential Water - Lawn	Block 1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	Block 2	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	Block 3	<u>0.0</u>	<u>0.0</u>	<u>0.1</u>	<u>0.1</u>	<u>0.1</u>	<u>0.1</u>	<u>0.1</u>	<u>0.1</u>	<u>0.1</u>	<u>0.1</u>	<u>0.1</u>
	Total	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3
Commercial Water Outside City - Domestic	Block 1	784.4	789.6	794.9	800.2	805.4	810.7	816.0	821.2	826.5	831.8	837.0
	Block 2	149.9	150.9	151.9	153.0	154.0	155.0	156.0	157.0	158.0	159.0	160.0
	Block 3	<u>7.4</u>	<u>7.5</u>	<u>7.5</u>	<u>7.6</u>	<u>7.6</u>	<u>7.7</u>	<u>7.7</u>	<u>7.8</u>	<u>7.8</u>	<u>7.9</u>	<u>7.9</u>
	Total	941.8	948.1	954.4	960.7	967.0	973.4	979.7	986.0	992.3	998.6	1,005.0
Commercial Water Outside City - No Sewer	Block 1	92.8	123.7	154.7	185.6	216.5	247.5	278.4	309.3	340.3	371.2	402.1
	Block 2	19.4	25.9	32.4	38.9	45.3	51.8	58.3	64.8	71.3	77.7	84.2
	Block 3	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
	Total	112.2	149.6	187.1	224.5	261.9	299.3	336.7	374.1	411.5	448.9	486.3
Commercial Water Outside City - Lawn	Block 1	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8
	Block 2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5
	Block 3	<u>0.6</u>	<u>0.6</u>	<u>0.6</u>	<u>0.6</u>	<u>0.6</u>	<u>0.6</u>	<u>0.6</u>	<u>0.6</u>	<u>0.6</u>	<u>0.6</u>	<u>0.6</u>
	Total	1.7	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.8	1.9
Andover Commercial Water - Domestic	Block 1	84.1	84.4	84.8	85.1	85.5	85.8	86.2	86.5	86.9	87.2	87.6
	Block 2	16.2	16.2	16.3	16.4	16.4	16.5	16.6	16.6	16.7	16.8	16.8
	Block 3	<u>8.6</u>	<u>8.6</u>	<u>8.6</u>	<u>8.7</u>	<u>8.7</u>	<u>8.7</u>	<u>8.8</u>	<u>8.8</u>	<u>8.8</u>	<u>8.9</u>	<u>8.9</u>
	Total	108.8	109.3	109.7	110.2	110.6	111.1	111.5	112.0	112.4	112.9	113.3
Andover Commercial Water - Lawn	Block 1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1
	Block 2	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
	Block 3	<u>2.8</u>	<u>2.8</u>	<u>2.8</u>	<u>2.9</u>	<u>2.9</u>	<u>2.9</u>	<u>2.9</u>	<u>2.9</u>	<u>3.0</u>	<u>3.0</u>	<u>3.0</u>
	Total	4.9	5.0	5.0	5.1	5.1	5.1	5.2	5.2	5.3	5.3	5.3
Special Contract	Total	9.1	9.5	9.9	10.3	10.7	11.1	11.5	11.9	12.3	12.8	13.2
Total Outside City Consumption		1,708.3	1,754.9	1,801.4	1,847.9	1,894.4	1,940.9	1,987.5	2,034.0	2,080.5	2,127.0	2,173.6
Non-Potable Water Wholesale	Total	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4
Uniform Wholesale Volume	Total	865.7	865.7	865.7	865.7	865.7	865.7	865.7	865.7	865.7	865.7	865.7
Wholesale	Block 1	529.7	529.7	529.7	529.7	529.7	529.7	529.7	529.7	529.7	529.7	529.7
	Block 2	25.4	25.4	25.4	25.4	25.4	25.4	25.4	25.4	25.4	25.4	25.4
	Block 3	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
	Total	555.1	555.1	555.1	555.1	555.1	555.1	555.1	555.1	555.1	555.1	555.1
Total Wholesale Consumption		1,431.2	1,431.2	1,431.2	1,431.2	1,431.2	1,431.2	1,431.2	1,431.2	1,431.2	1,431.2	1,431.2
Total Water Utility		17,787.7	17,905.0	18,022.5	18,140.0	18,257.7	18,375.8	18,494.1	18,612.6	18,731.1	18,849.8	18,968.7

2.2 Forecast of Water Meters and Annual Bills

After completing the customer account forecast shown in Table 2-5, it is possible to forecast the number of water meters and the associated bills that will be sent to customers during each year of the 2011 - 2021 planning horizon. Table 2-7 shows this forecast which includes a forecast of private fire connections and the associated number of private fire connection bills.

2.3 Forecast Water Rate Revenue at Existing Rates

A key component of the financial planning process is to forecast the total amount of volumetric and fixed rate revenue that would be earned if existing 2011 water rates were to remain unchanged during the planning horizon. Table 2-8 presents this forecast which is derived from the forecast of billed water consumption shown in Table 2-6 and the forecast of water and private fire protection bills by meter size as shown in Table 2-7.

Table 2-7
Forecast of Water Meters, Private Fire Connections and Annual Bills 2011 - 2016

Water Meter Forecast											
Meter Size	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
5/8"	69,392	69,626	69,860	70,094	70,329	70,566	70,801	71,039	71,279	71,517	71,757
3/4"	12,385	12,426	12,466	12,507	12,552	12,595	12,637	12,679	12,721	12,764	12,807
1"	58,638	58,836	59,034	59,231	59,430	59,631	59,832	60,034	60,236	60,438	60,643
1 1/2"	18	18	18	18	18	18	18	18	18	18	18
2"	2,399	2,409	2,417	2,425	2,432	2,443	2,451	2,464	2,472	2,480	2,487
3"	206	208	208	209	209	210	210	211	213	214	214
4"	99	100	100	100	100	101	101	101	101	102	103
6"	48	48	49	49	49	50	50	50	50	50	51
8"	13	13	13	13	13	13	13	13	13	13	13
10"	5	5	5	5	5	5	6	6	6	6	6
12"	0	0	0	0	0	0	0	0	0	0	0
Total	143,203	143,689	144,170	144,651	145,137	145,632	146,119	146,615	147,109	147,602	148,099
Water Bills											
Meter Size	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
5/8"	832,704	835,512	838,320	841,128	843,948	846,792	849,612	852,468	855,348	858,204	861,084
3/4"	148,620	149,112	149,592	150,084	150,624	151,140	151,644	152,148	152,652	153,168	153,684
1"	703,656	706,032	708,408	710,772	713,160	715,572	717,984	720,408	722,832	725,256	727,716
1 1/2"	216	216	216	216	216	216	216	216	216	216	216
2"	28,788	28,908	29,004	29,100	29,184	29,316	29,412	29,568	29,664	29,760	29,844
3"	2,472	2,496	2,496	2,508	2,508	2,520	2,520	2,532	2,556	2,568	2,568
4"	1,188	1,200	1,200	1,200	1,200	1,212	1,212	1,212	1,212	1,224	1,236
6"	576	576	588	588	588	600	600	600	600	600	612
8"	156	156	156	156	156	156	156	156	156	156	156
10"	60	60	60	60	60	60	72	72	72	72	72
12"	0	0	0	0	0	0	0	0	0	0	0
Total	1,718,436	1,724,268	1,730,040	1,735,812	1,741,644	1,747,584	1,753,428	1,759,380	1,765,308	1,771,224	1,777,188
Private Fire Connections											
Meter Size	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
5/8"	588	590	592	595	597	599	602	604	606	609	611
3/4"	132	132	133	133	134	134	135	135	136	137	138
1"	710	713	716	719	722	724	728	730	733	736	738
1 1/2"	2	2	2	2	2	2	2	2	2	2	2
2"	279	281	282	283	284	285	286	287	289	289	290
3"	25	25	25	25	25	25	25	25	25	25	26
4"	11	11	11	11	11	11	11	11	12	12	12
6"	5	5	5	5	5	5	5	5	5	6	6
8"	1	1	1	1	1	1	1	2	2	2	2
10"	1	1	1	1	1	1	1	1	1	1	1
Total	1,754	1,761	1,768	1,775	1,782	1,787	1,796	1,802	1,811	1,819	1,826
Private Fire Connection Bills											
Meter Size	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
5/8"	7,056	7,080	7,104	7,140	7,164	7,188	7,224	7,248	7,272	7,308	7,332
3/4"	1,584	1,584	1,596	1,596	1,608	1,608	1,620	1,620	1,632	1,644	1,656
1"	8,520	8,556	8,592	8,628	8,664	8,688	8,736	8,760	8,796	8,832	8,856
1 1/2"	24	24	24	24	24	24	24	24	24	24	24
2"	3,348	3,372	3,384	3,396	3,408	3,420	3,432	3,444	3,468	3,468	3,480
3"	300	300	300	300	300	300	300	300	300	300	312
4"	132	132	132	132	132	132	132	132	144	144	144
6"	60	60	60	60	60	60	60	60	60	72	72
8"	12	12	12	12	12	12	12	24	24	24	24
10"	12	12	12	12	12	12	12	12	12	12	12
Total	21,048	21,132	21,216	21,300	21,384	21,444	21,552	21,624	21,732	21,828	21,912

Table 2-8
Forecast Water Utility Revenue at Existing Rates 2011 - 2021 (\$ Thousands)

Description	Revenue	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Residential Water Inside City - Domestic	Volumetric	22,034.6	22,107.5	22,180.5	22,253.7	22,327.3	22,401.0	22,475.0	22,549.2	22,623.7	22,698.5	22,773.6
	Fixed	<u>16,590.7</u>	<u>16,645.7</u>	<u>16,700.5</u>	<u>16,755.6</u>	<u>16,811.0</u>	<u>16,866.5</u>	<u>16,922.3</u>	<u>16,978.1</u>	<u>17,034.2</u>	<u>17,090.7</u>	<u>17,147.0</u>
	Total	\$38,625.3	\$38,753.1	\$38,881.0	\$39,009.3	\$39,138.3	\$39,267.6	\$39,397.3	\$39,527.4	\$39,657.9	\$39,789.2	\$39,920.6
Residential Water Inside City - Lawn	Volumetric	12.1	12.3	12.4	12.5	12.7	12.8	13.0	13.1	13.3	13.4	13.6
	Fixed	<u>11.1</u>	<u>11.3</u>	<u>11.3</u>	<u>11.5</u>	<u>11.7</u>	<u>11.9</u>	<u>11.9</u>	<u>12.1</u>	<u>12.2</u>	<u>12.4</u>	<u>12.5</u>
	Total	\$23.2	\$23.5	\$23.7	\$24.1	\$24.4	\$24.8	\$24.9	\$25.2	\$25.5	\$25.8	\$26.1
Commercial Water Inside City - Domestic	Volumetric	12,480.3	12,522.0	12,563.7	12,605.4	12,647.1	12,689.9	12,732.8	12,775.6	12,818.4	12,861.3	12,904.1
	Fixed	<u>1,569.2</u>	<u>1,574.7</u>	<u>1,579.5</u>	<u>1,584.8</u>	<u>1,589.8</u>	<u>1,595.8</u>	<u>1,601.3</u>	<u>1,606.8</u>	<u>1,611.9</u>	<u>1,617.4</u>	<u>1,622.5</u>
	Total	\$14,049.5	\$14,096.6	\$14,143.2	\$14,190.1	\$14,236.8	\$14,285.8	\$14,334.0	\$14,382.4	\$14,430.3	\$14,478.7	\$14,526.6
Commercial Water Inside City - No Sewer	Volumetric	346.7	385.2	423.7	462.3	500.8	539.3	577.8	616.4	654.9	693.4	731.9
	Fixed	<u>1.2</u>	<u>1.4</u>	<u>1.5</u>	<u>1.7</u>	<u>1.7</u>	<u>1.9</u>	<u>1.9</u>	<u>2.1</u>	<u>2.4</u>	<u>2.4</u>	<u>2.5</u>
	Total	\$347.9	\$386.6	\$425.3	\$463.9	\$502.5	\$541.3	\$579.8	\$618.5	\$657.2	\$695.8	\$734.4
Commercial Water Inside City - Lawn	Volumetric	1,112.7	1,116.5	1,120.2	1,124.0	1,127.7	1,131.5	1,135.2	1,139.4	1,143.5	1,147.7	1,151.8
	Fixed	<u>378.6</u>	<u>380.2</u>	<u>381.6</u>	<u>382.9</u>	<u>384.1</u>	<u>385.4</u>	<u>386.5</u>	<u>388.0</u>	<u>389.5</u>	<u>390.8</u>	<u>392.1</u>
	Total	\$1,491.3	\$1,496.7	\$1,501.9	\$1,506.9	\$1,511.9	\$1,516.9	\$1,521.7	\$1,527.4	\$1,533.0	\$1,538.4	\$1,544.0
Special Contract Inside City	Volumetric	814.6	819.2	823.7	828.3	832.8	837.4	841.9	846.5	851.0	855.6	860.1
	Fixed	<u>50.4</u>	<u>50.7</u>	<u>51.0</u>	<u>51.1</u>	<u>51.5</u>	<u>51.8</u>	<u>52.1</u>	<u>52.3</u>	<u>52.5</u>	<u>52.8</u>	<u>53.3</u>
	Total	\$865.0	\$869.9	\$874.7	\$879.4	\$884.3	\$889.2	\$894.0	\$898.8	\$903.5	\$908.4	\$913.4
Private Fire Connections	Fixed	\$77.8	\$78.0	\$78.3	\$78.5	\$78.8	\$79.1	\$79.4	\$79.8	\$80.2	\$80.6	\$80.9
Total Inside City		\$55,480.1	\$55,704.4	\$55,928.0	\$56,152.3	\$56,377.0	\$56,604.5	\$56,831.1	\$57,059.5	\$57,287.8	\$57,516.8	\$57,746.1
Residential Water Outside City - Domestic	Volumetric	1,068.0	1,071.6	1,075.3	1,078.9	1,082.5	1,086.2	1,089.8	1,093.4	1,097.1	1,100.7	1,104.7
	Fixed	<u>638.8</u>	<u>641.0</u>	<u>643.1</u>	<u>645.3</u>	<u>647.5</u>	<u>649.7</u>	<u>651.8</u>	<u>654.0</u>	<u>656.2</u>	<u>658.4</u>	<u>660.5</u>
	Total	\$1,706.8	\$1,712.6	\$1,718.4	\$1,724.2	\$1,730.0	\$1,735.8	\$1,741.6	\$1,747.4	\$1,753.2	\$1,759.0	\$1,765.2
Andover Residential Water - Domestic	Volumetric	1,236.6	1,240.8	1,245.1	1,249.4	1,253.7	1,257.9	1,262.2	1,266.5	1,270.8	1,275.0	1,279.3
	Fixed	<u>691.8</u>	<u>693.8</u>	<u>696.4</u>	<u>698.5</u>	<u>701.1</u>	<u>703.3</u>	<u>705.9</u>	<u>708.1</u>	<u>710.7</u>	<u>712.9</u>	<u>715.5</u>
	Total	\$1,928.4	\$1,934.6	\$1,941.5	\$1,947.9	\$1,954.8	\$1,961.2	\$1,968.1	\$1,974.6	\$1,981.4	\$1,987.9	\$1,994.8
Residential Water Outside City - Lawn	Volumetric	7.8	8.2	8.5	8.9	9.2	9.6	9.9	10.2	10.6	10.9	11.3
	Fixed	<u>5.0</u>	<u>5.2</u>	<u>5.4</u>	<u>5.6</u>	<u>5.9</u>	<u>5.9</u>	<u>6.5</u>	<u>6.5</u>	<u>6.9</u>	<u>6.9</u>	<u>7.4</u>
	Total	\$12.8	\$13.4	\$14.0	\$14.5	\$15.1	\$15.4	\$16.4	\$16.8	\$17.5	\$17.9	\$18.6
Andover Residential Water - Lawn	Volumetric	1.0	1.1	1.3	1.4	1.5	1.7	1.8	1.9	2.0	2.2	2.3
	Fixed	<u>1.7</u>	<u>2.2</u>	<u>2.2</u>	<u>2.6</u>	<u>2.6</u>	<u>2.8</u>	<u>3.0</u>	<u>3.3</u>	<u>3.5</u>	<u>3.7</u>	<u>3.9</u>
	Total	\$2.8	\$3.3	\$3.4	\$4.0	\$4.1	\$4.5	\$4.8	\$5.2	\$5.5	\$5.9	\$6.2
Commercial Water Outside City - Domestic	Volumetric	3,194.8	3,216.3	3,237.7	3,259.1	3,280.6	3,302.0	3,323.5	3,344.9	3,366.4	3,387.8	3,409.2
	Fixed	<u>33.3</u>	<u>33.6</u>	<u>33.8</u>	<u>34.0</u>	<u>34.0</u>	<u>34.7</u>	<u>34.9</u>	<u>34.9</u>	<u>35.3</u>	<u>35.3</u>	<u>35.8</u>
	Total	\$3,228.2	\$3,249.8	\$3,271.5	\$3,293.1	\$3,314.6	\$3,336.7	\$3,358.4	\$3,379.8	\$3,401.7	\$3,423.1	\$3,445.1

Table 2-8 - Continued												
Forecast Revenue at Existing Rates 2011 - 2021 (\$ Thousands)												
Description	Revenue	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Commercial Water Outside City - No Sewer	Volumetric	381.2	508.2	635.3	762.4	889.4	1,016.5	1,143.6	1,270.6	1,397.7	1,524.7	1,651.8
	Fixed	<u>0.4</u>	<u>0.9</u>	<u>1.1</u>	<u>1.1</u>	<u>1.6</u>	<u>1.8</u>	<u>2.0</u>	<u>2.2</u>	<u>2.4</u>	<u>2.7</u>	<u>2.7</u>
	Total	\$381.6	\$509.1	\$636.4	\$763.5	\$891.0	\$1,018.3	\$1,145.5	\$1,272.8	\$1,400.1	\$1,527.4	\$1,654.5
Commercial Water Outside City - Lawn	Volumetric	12.5	12.6	12.8	12.9	13.1	13.2	13.3	13.5	13.6	13.7	13.9
	Fixed	<u>20.3</u>	<u>20.8</u>	<u>21.0</u>	<u>21.0</u>	<u>21.2</u>	<u>21.4</u>	<u>21.4</u>	<u>22.1</u>	<u>22.1</u>	<u>22.3</u>	<u>22.7</u>
	Total	\$32.8	\$33.4	\$33.8	\$33.9	\$34.3	\$34.6	\$34.8	\$35.6	\$35.7	\$36.1	\$36.6
Andover Commercial Water - Domestic	Volumetric	444.6	446.4	448.3	450.1	452.0	453.8	455.6	457.5	459.3	461.1	463.0
	Fixed	<u>54.8</u>	<u>54.8</u>	<u>55.3</u>	<u>55.3</u>	<u>55.5</u>	<u>55.9</u>	<u>55.9</u>	<u>56.4</u>	<u>57.0</u>	<u>57.2</u>	<u>57.2</u>
	Total	\$499.5	\$501.3	\$503.6	\$505.4	\$507.5	\$509.7	\$511.6	\$513.9	\$516.3	\$518.3	\$520.2
Andover Commercial Water - Lawn	Volumetric	48.5	49.0	49.4	49.8	50.2	50.6	51.0	51.4	51.8	52.2	52.7
	Fixed	<u>26.9</u>	<u>26.9</u>	<u>27.1</u>	<u>27.3</u>	<u>27.3</u>	<u>27.8</u>	<u>28.0</u>	<u>28.2</u>	<u>28.2</u>	<u>28.7</u>	<u>28.9</u>
	Total	\$75.4	\$75.9	\$76.5	\$77.1	\$77.5	\$78.4	\$79.0	\$79.7	\$80.1	\$80.9	\$81.5
Andover Commercial Water - Lawn	Volumetric	48.5	49.0	49.4	49.8	50.2	50.6	51.0	51.4	51.8	52.2	52.7
	Fixed	<u>26.9</u>	<u>26.9</u>	<u>27.1</u>	<u>27.3</u>	<u>27.3</u>	<u>27.8</u>	<u>28.0</u>	<u>28.2</u>	<u>28.2</u>	<u>28.7</u>	<u>28.9</u>
	Total	\$75.4	\$75.9	\$76.5	\$77.1	\$77.5	\$78.4	\$79.0	\$79.7	\$80.1	\$80.9	\$81.5
Special Contract Outside City	Volumetric	39.7	41.6	43.4	45.2	47.0	48.8	50.6	52.4	54.2	56.0	57.8
	Fixed	<u>4.9</u>	<u>5.1</u>	<u>5.3</u>	<u>5.3</u>	<u>5.8</u>	<u>5.8</u>	<u>5.8</u>	<u>6.4</u>	<u>6.4</u>	<u>6.7</u>	<u>6.9</u>
	Total	\$44.6	\$46.7	\$48.7	\$50.5	\$52.7	\$54.5	\$56.4	\$58.8	\$60.6	\$62.7	\$64.7
Private Fire Connections	Fixed	\$4.6	\$4.8	\$4.8	\$4.9	\$4.9	\$4.9	\$5.0	\$5.0	\$5.2	\$5.3	\$5.3
Total Outside City		\$7,917.5	\$8,084.9	\$8,252.5	\$8,419.1	\$8,586.5	\$8,754.1	\$8,921.6	\$9,089.5	\$9,257.4	\$9,424.5	\$9,592.7
Non-Potable Water Wholesale	Volumetric	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3
	Fixed	<u>0.2</u>	<u>0.2</u>	<u>0.2</u>	<u>0.2</u>	<u>0.2</u>	<u>0.2</u>	<u>0.2</u>	<u>0.2</u>	<u>0.2</u>	<u>0.2</u>	0.2
	Total	\$10.5	\$10.5	\$10.5	\$10.5	\$10.5	\$10.5	\$10.5	\$10.5	\$10.5	\$10.5	\$10.5
Uniform Wholesale Volume	Volumetric	1,740.1	1,740.1	1,740.1	1,740.1	1,740.1	1,740.1	1,740.1	1,740.1	1,740.1	1,740.1	1,740.1
	Fixed	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
	Total	\$1,740.9	\$1,740.9	\$1,740.9	\$1,740.9	\$1,740.9	\$1,740.9	\$1,740.9	\$1,740.9	\$1,740.9	\$1,740.9	\$1,740.9
Wholesale Water	Volumetric	1,012.1	1,012.1	1,012.1	1,012.1	1,012.1	1,012.1	1,012.1	1,012.1	1,012.1	1,012.1	1,012.1
	Fixed	<u>3.3</u>	<u>3.3</u>	<u>3.3</u>	<u>3.3</u>	<u>3.3</u>	<u>3.3</u>	<u>3.3</u>	<u>3.3</u>	<u>3.3</u>	<u>3.3</u>	<u>3.3</u>
	Total	\$1,015.5	\$1,015.5	\$1,015.5	\$1,015.5	\$1,015.5	\$1,015.5	\$1,015.5	\$1,015.5	\$1,015.5	\$1,015.5	\$1,015.5
Total Wholesale		\$2,766.9	\$2,766.9	\$2,766.9	\$2,766.9	\$2,766.9	\$2,766.9	\$2,766.9	\$2,766.9	\$2,766.9	\$2,766.9	\$2,766.9
Total Water Utility		\$66,164.5	\$66,556.2	\$66,947.4	\$67,338.2	\$67,730.3	\$68,125.4	\$68,519.6	\$68,915.9	\$69,312.1	\$69,708.2	\$70,105.7

2.4 Forecast Water CIP Expenditures and Financing

The CIP expenditure forecast used by RFC in the water utility financial plan was supplied by City staff. Staff's forecast features inflation-adjusted CIP expenditures for the period 2011 - 2020 and RFC did not apply any additional inflation factors. The water utility financial plan prepared by RFC covers the period 2011 - 2021. In order to develop a complete profile of CIP expenditures over the entire financial planning horizon, RFC assumed that 2021 CIP expenditures will equal those forecast by City staff for 2020 (\$23.8 million).

The City funds water CIP expenditures through the Water Improvement Subaccount which receives the proceeds from revenue bond and general obligation debt issues, as well as, operating surpluses transferred from the Water Utility Fund. Operating surpluses from the Water Utility Fund reflect the excess of water rate revenues over operating expenses and thus can be thought of as direct water rate pay-as-you-go financing of CIP expenditures. The inflation-adjusted CIP expenditures contained in the 2011 - 2021 water utility financial plan are forecast to be \$427.4 million. The forecast financing sources for these expenditures are a 2011 beginning balance of \$47.3 million in the Water Improvement Subaccount which reflects the unspent proceeds of previous debt issues; \$81.3 million of rate revenue financing generated from operating surpluses in the Water Utility Fund; and the issuance of \$332.0 million in new revenue bonds which, after the subtraction of debt issuance costs, generate net proceeds of \$304.4 million. No general obligation debt is forecast to be used to fund water CIP expenditures during the planning horizon, although the previously initiated Phase II of the ASR Project will be permanently financed by general obligation debt, paid back by water revenues.

Table 2-9 provides a forecast of key Water Improvement Subaccount metrics. The Water Improvement Subaccount end of year balances shown in Table 2-9 reflect an amount equal to 25% of the subsequent year's forecast CIP expenditures. The particularly large CIP expenditure of \$111.2 million forecast for 2016 includes \$64.8 million for the Northwest Water Treatment Plant and \$27 million for a 66" diameter transmission line extension.

2.5 Forecast Water O&M Expenditures

The water utility financial plan contains a forecast of O&M expenditures which was developed in consultation with City staff. The starting point for the O&M expenditure forecast was the adopted 2011 and approved 2012 Public Works & Utilities Department budget. Table 2-10 shows the inflation rates used in O&M forecast as developed in consultation with City staff. Table 2-11 shows a summarized forecast of O&M expenditures during the 2011 - 2021 planning horizon. The O&M expenditures shown in Table 2-11 are net of reimbursements from the Sewer Utility Fund to the Water Utility Fund and forecast "planned savings" from unfilled vacancies and other efficiencies.

Table 2-9 Forecast Water CIP Expenditures and CIP Funding Sources 2011 - 2021 (\$ Thousands)											
Metric	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Beginning Balance - Water Improvement Subaccount	\$47,345.4	\$15,793.9	\$10,352.0	\$11,209.9	\$6,617.6	\$7,146.7	\$7,100.8	\$28,114.1	\$6,457.1	\$6,040.1	\$6,548.0
Revenue Bonds Issued	\$0.0	\$32,500.0	\$35,500.0	\$31,000.0	\$18,000.0	\$27,000.0	\$45,000.0	\$91,500.0	\$19,000.0	\$17,000.0	\$15,500.0
Bond Issuance Costs	<u>\$0.0</u>	<u>\$2,600.0</u>	<u>\$2,840.0</u>	<u>\$2,480.0</u>	<u>\$1,440.0</u>	<u>\$2,160.0</u>	<u>\$3,600.0</u>	<u>\$7,320.0</u>	<u>\$1,520.0</u>	<u>\$1,360.0</u>	<u>\$1,240.0</u>
Net Bonds Proceeds	\$0.0	\$29,900.0	\$32,660.0	\$28,520.0	\$16,560.0	\$24,840.0	\$41,400.0	\$84,180.0	\$17,480.0	\$15,640.0	\$14,260.0
Transfers from the Water Utility Fund	\$7,500.0	\$7,100.0	\$8,300.0	\$10,200.0	\$9,400.0	\$2,000.0	\$6,500.0	\$5,400.0	\$6,500.0	\$8,700.0	\$9,700.0
Water CIP Expenditures	\$39,051.5	\$42,441.9	\$40,102.1	\$43,312.3	\$25,430.9	\$26,885.9	\$26,886.7	\$111,236.9	\$24,397.0	\$23,832.1	\$23,832.1
Ending Balance - Water Improvement Subaccount	\$15,793.9	\$10,352.0	\$11,209.9	\$6,617.6	\$7,146.7	\$7,100.8	\$28,114.1	\$6,457.1	\$6,040.1	\$6,548.0	\$6,675.9

Table 2-10 Inflation Rates Used in the Water O&M Expenditures Forecast	
Expenditure Category	Expenditure Inflation Rate
General Inflation (Applied to Expenditures not Specified Below)	3.00% Annual Growth Beginning in 2013
Salaries and Benefits	3.00% Annual Growth Beginning in 2013
Health Insurance	8.00% Annual Growth Beginning in 2013
Gas & Electricity	3.00% Annual Growth Beginning in 2013
Industrial Chemicals	3.00% Annual Growth Beginning in 2013
Reimbursements from the Sewer Utility Fund	Annual Calculation Specified by City Staff
Franchise Fees	5.00% of Forecast Water Utility Revenues
Contributions to Other Funds	2.00% Annual Growth Beginning in 2013
Reimbursements to Other Departments	3.00% Annual Growth Beginning in 2013
Planned Savings	Amounts as Specified by City Staff
Bad Debt Expense	% Annual Growth Beginning in 2013 Based on the % Increase in Water Rate Revenues

Table 2-11
Forecast Water Operations & Maintenance Expenditures 2011 - 2021 (\$ Thousands)

Division	2011 Adopted Budget	2012 Approved Budget	2013	2014	2015	2016	2017	2018	2019	2020	2021
Water Administration											
Contractuals	2,312.8	2,348.2	2,419.3	2,500.9	2,599.6	2,703.1	2,811.8	2,914.0	3,014.1	3,117.7	3,218.2
Commodities	19.5	19.7	20.3	20.9	21.6	22.2	22.9	23.6	24.3	25.0	25.8
Interfund Transfers	3,336.9	3,418.0	3,496.1	3,576.0	3,657.8	3,741.5	3,827.3	3,952.1	4,043.0	4,136.2	4,231.6
Debt Service	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other	<u>3,933.6</u>	<u>4,276.8</u>	<u>4,702.7</u>	<u>4,928.4</u>	<u>5,276.2</u>	<u>5,652.1</u>	<u>6,058.5</u>	<u>6,403.7</u>	<u>6,720.1</u>	<u>7,053.1</u>	<u>7,347.6</u>
Total	\$9,602.8	\$10,062.7	\$10,638.4	\$11,026.3	\$11,555.1	\$12,118.9	\$12,720.5	\$13,293.3	\$13,801.5	\$14,332.1	\$14,823.2
Water Customer Service											
Personal services	602.1	630.0	659.1	687.9	718.2	750.2	784.1	819.8	857.6	897.6	964.3
Contractuals	958.8	966.7	995.7	1,025.6	1,056.4	1,088.1	1,120.7	1,154.3	1,189.0	1,224.6	1,261.4
Commodities	154.6	160.6	165.4	170.4	175.5	180.8	186.2	191.8	197.6	203.5	209.6
Capital Outlay	<u>0.0</u>	<u>59.5</u>	<u>49.0</u>	<u>51.0</u>	<u>53.1</u>	<u>55.2</u>	<u>57.5</u>	<u>59.8</u>	<u>62.2</u>	<u>64.8</u>	<u>62.2</u>
Total	\$1,715.4	\$1,816.9	\$1,869.3	\$1,934.9	\$2,003.2	\$2,074.3	\$2,148.5	\$2,225.7	\$2,306.4	\$2,390.5	\$2,497.4
Water Distribution											
Personal services	4,703.3	4,835.3	5,019.4	5,212.0	5,413.9	5,625.4	5,847.3	6,080.0	6,324.3	6,580.8	6,852.7
Contractuals	2,007.9	2,016.0	2,076.5	2,138.8	2,203.0	2,269.1	2,337.2	2,407.3	2,479.5	2,553.9	2,630.5
Commodities	2,302.2	2,383.8	2,455.3	2,529.0	2,604.9	2,683.0	2,763.5	2,846.4	2,931.8	3,019.7	3,110.3
Capital outlay	740.5	483.5	562.1	584.9	608.6	633.3	659.0	685.8	713.6	742.6	742.6
Other	<u>2,000.0</u>	<u>2,000.0</u>	<u>2,060.0</u>	<u>2,121.8</u>	<u>2,185.5</u>	<u>2,251.0</u>	<u>2,318.5</u>	<u>2,388.1</u>	<u>2,459.7</u>	<u>2,533.5</u>	<u>2,609.5</u>
Total	\$11,754.0	\$11,718.7	\$12,173.3	\$12,586.5	\$13,015.8	\$13,461.9	\$13,925.5	\$14,407.5	\$14,908.9	\$15,430.6	\$15,945.6
Water Production											
Personal services	3,565.6	3,618.7	3,756.5	3,900.7	4,051.8	4,210.2	4,376.2	4,550.4	4,733.3	4,925.4	5,140.4
Contractuals	6,118.1	7,081.2	7,293.6	7,512.5	7,737.8	7,970.0	8,209.1	8,455.3	8,709.0	8,970.3	9,239.4
Commodities	2,988.0	3,259.1	3,356.9	3,457.6	3,561.3	3,668.1	3,778.2	3,891.5	4,008.3	4,128.5	4,252.4
Capital outlay	109.5	610.1	172.4	179.4	186.7	194.3	202.2	210.4	218.9	227.8	227.8
Other	<u>46.2</u>	<u>50.0</u>	<u>51.5</u>	<u>53.0</u>	<u>54.6</u>	<u>56.3</u>	<u>58.0</u>	<u>59.7</u>	<u>61.5</u>	<u>63.3</u>	<u>65.2</u>
Total	\$12,827.4	\$14,619.1	\$14,630.9	\$15,103.2	\$15,592.3	\$16,098.8	\$16,623.6	\$17,167.4	\$17,731.0	\$18,315.3	\$18,925.2
Total O&M Expenditures	\$35,899.6	\$38,217.3	\$39,311.9	\$40,650.9	\$42,166.4	\$43,753.9	\$45,418.0	\$47,094.0	\$48,747.7	\$50,468.4	\$52,191.4

2.6 Forecast Water Debt Service Expenditures

Table 2-12 shows the forecast debt service expenditures included in the water utility financial plan. They include the debt service associated with:

- Existing revenue bond debt issues, applicable to the water utility, made prior to 2011. The debt service for each of these existing revenue bond issues is based on their specified principal and interest repayment schedules as provided by City staff.
- Forecast revenue bond issues, in the amount of \$332.0 million, to fund planned water CIP expenditures (see Table 2-9) during the period 2011 - 2021. The debt service for each of these forecast revenue bond debt issues is based on a 20-year term and a 6.00% annual interest rate. Bond issuance costs are estimated to be equivalent to 8.00% of the gross amount issued. During the year of issue, debt service for the revenue bonds is assumed to be equivalent to six-months of interest. Level annual principal and interest payments are assumed to begin in the year following issuance.
- Existing 2010 general obligation notes, in the amount of \$140 million, issued to fund Phase II of the ASR Project. The debt service for these notes is based on an interest rate of 0.045%.
- Forecast 2011 general obligation notes, in the amount of \$49 million, for additional ASR Phase II financing. The debt service for these notes is forecast to be 1.45%.
- Forecast 2015 general obligation bonds, in the amount of \$205 million, to refinance the 2009 and 2010 general obligation notes referenced above. For the sake of conservatism, bond issuance costs are estimated to be equivalent to 8.00% of the gross amount issued which will result in net proceeds of \$189 million. The forecast debt service for this general obligation bond issue is based on a 20-year term and a 5.00% annual interest rate. During the year of issue, debt service is assumed to be equivalent to six-months of interest. Level annual principal and interest payments are assumed to begin in the year following issuance. Note that because this is a refinancing of existing general obligation notes, the debt service is included as part of existing general obligation debt in Table 2-12.

2.7 Forecast Water Non-Rate Revenues

The water utility financial plan contains a forecast of annual revenues derived from miscellaneous non-rate sources. This forecast, which is based on the approved 2012 Water Utility Fund budget, is shown in Table 2-13. The growth in Plant Equity Fees shown in Table 2-13 is based on the forecast growth in water customer accounts as derived in Table 2-5.

Table 2-12
Forecast Water Debt Service Expenditures 2011 - 2021 (\$ Thousands)

Debt Service Component	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Existing Revenue Bonds											
Principal	13,119.3	13,611.0	12,993.9	13,568.8	14,218.2	14,941.7	12,829.6	13,065.3	10,945.2	11,229.6	11,539.3
Interest	<u>12,270.1</u>	<u>11,762.0</u>	<u>11,200.5</u>	<u>10,628.1</u>	<u>10,068.4</u>	<u>9,422.6</u>	<u>8,732.1</u>	<u>8,157.9</u>	<u>7,545.0</u>	<u>7,013.7</u>	<u>6,584.0</u>
Total	\$25,389.5	\$25,373.0	\$24,194.5	\$24,196.9	\$24,286.6	\$24,364.3	\$21,561.7	\$21,223.2	\$18,490.2	\$18,243.3	\$18,123.2
New Revenue Bonds											
Principal	0.0	0.0	883.5	1,901.6	2,858.4	3,519.2	4,464.3	5,955.5	8,800.2	9,844.7	10,897.6
Interest	<u>0.0</u>	<u>975.0</u>	<u>3,015.0</u>	<u>4,957.0</u>	<u>6,312.9</u>	<u>7,491.4</u>	<u>9,440.2</u>	<u>13,267.4</u>	<u>16,225.1</u>	<u>16,777.0</u>	<u>17,161.4</u>
Total	\$0.0	\$975.0	\$3,898.5	\$6,858.5	\$9,171.3	\$11,010.6	\$13,904.6	\$19,222.9	\$25,025.3	\$26,621.8	\$28,058.9
Existing GO Debt											
Principal	0.0	0.0	0.0	0.0	0.0	6,199.7	6,509.7	6,835.2	7,177.0	7,535.8	7,912.6
Interest	<u>985.3</u>	<u>1,340.5</u>	<u>1,340.5</u>	<u>1,340.5</u>	<u>5,125.0</u>	<u>10,250.0</u>	<u>9,940.0</u>	<u>9,614.5</u>	<u>9,272.8</u>	<u>8,913.9</u>	<u>8,537.1</u>
Total	\$985.3	\$1,340.5	\$1,340.5	\$1,340.5	\$5,125.0	\$16,449.7	\$16,449.7	\$16,449.7	\$16,449.7	\$16,449.7	\$16,449.7
New GO Debt											
Principal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Interest	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Total Debt Service	\$26,374.7	\$27,688.5	\$29,433.5	\$32,396.0	\$38,582.9	\$51,824.6	\$51,916.0	\$56,895.8	\$59,965.2	\$61,314.8	\$62,631.9

Table 2-13
Forecast Water Non-Rate Revenues and Receipts 2011 - 2021 (\$ Thousands)

Non-Rate Revenue Item	2011 Adopted Budget	2012 Approved Budget	2013	2014	2015	2016	2017	2018	2019	2020	2021
Other Revenue – Water	116.0	116.0	116.0	116.0	116.0	116.0	116.0	116.0	116.0	116.0	116.0
Backflow Fees	246.4	259.1	259.1	259.1	259.1	259.1	259.1	259.1	259.1	259.1	259.1
Bulk Sales	255.0	262.0	262.0	262.0	262.0	262.0	262.0	262.0	262.0	262.0	262.0
Account Origination Fees	347.5	350.0	350.0	350.0	350.0	350.0	350.0	350.0	350.0	350.0	350.0
Late Payment Charges	270.0	270.0	270.0	270.0	270.0	270.0	270.0	270.0	270.0	270.0	270.0
Plant Equity Fees	1,590.0	1,595.0	1,600.3	1,605.5	1,610.8	1,616.2	1,621.5	1,626.8	1,632.2	1,637.6	1,643.0
1" Service and Meter Sets	815.0	820.0	820.0	820.0	820.0	820.0	820.0	820.0	820.0	820.0	820.0
2" Service and Meter Sets	137.5	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0
Other	<u>299.1</u>	<u>299.1</u>	<u>299.1</u>	<u>299.1</u>	<u>299.1</u>	<u>299.1</u>	<u>299.1</u>	<u>299.1</u>	<u>299.1</u>	<u>299.1</u>	<u>299.1</u>
Total	\$4,076.5	\$4,111.2	\$4,116.5	\$4,121.8	\$4,127.1	\$4,132.4	\$4,137.7	\$4,143.1	\$4,148.5	\$4,153.8	\$4,159.2

2.8 Comprehensive Water Utility Financial Plan

The culmination of the water utility financial planning process is the creation of a comprehensive cash flow forecast that shows the annual percentage increase in water rate revenues required to fund the cost of: 1) O&M expenditures; 2) debt service expenditures; 3) transfers to the Water Improvement Subaccount to fund CIP expenditures; and, 4) the maintenance of Water Utility Fund reserves equivalent to approximately 60 days of forecast O&M expenditures.

Table 2-15 shows the comprehensive water utility financial plan for the period 2011 - 2021 as derived from the inputs discussed in Sections 2.1 through 2.7 of this report. Although the City calculates revenue bond debt service coverage requirements on consolidated, combined water and sewer utility basis, Table 2-15 also provides forecast water utility standalone debt service coverage ratios as developed under the guidance of City staff. Table 2-14 shows an expanded detail of the forecast 2012 standalone water utility debt service coverage calculation.

Table 2-14 Detail of the Forecast 2012 Water Utility DSCR Calculation	
Item	Amount
Revenues - Total Water Related	\$73,329,695
Gross O&M Expenditures Before Adjustment	
01 - Personal Services	\$9,083,999
02 - Contractual Services	\$12,412,177
03 - Commodities	\$5,823,259
510 - Interfund Transfers	\$3,418,007
520 - Debt Service	\$0
04 - Capital Outlay	\$1,153,100
05 - Other	\$6,326,780
Total Gross O&M Expenditures Before Adjustment	\$38,217,322
O&M Expenditure Adjustments	
Less: Account 5100 Interfund Transfers (Water Administration)	\$3,418,007
Less: Account 5300 Contingency (Water Administration)	\$1,000,000
Less: Account 5308 - Engineering Overhead (Water Administration)	\$6,000
Less: Account 450 - Vehicular Equipment (Water Customer Service)	\$59,500
Less: Account 4XXX Capital Outlay (Water Distribution)	\$483,500
Less: Account 5401 - Inventory Clearing Account (Water Distribution)	\$2,000,000
Less: Account 4XXX Capital Outlay (Water Production)	\$610,100
Less: Account 5401 - Inventory Clearing Account (Water Production)	\$50,000
Less: Water Distribution Capitalized Overhead	\$2,915,504
Total O&M Expenditure Adjustments	\$10,542,611
Net O&M Expenditures for DSCR Calculation	\$27,674,711
Net Revenues Available for DSCR Calculation	\$45,654,984
DSCR Calculation - Revenue Bonds	
Existing Revenue Bond Debt Service	\$25,372,978
New Revenue Bond Debt Service	\$975,000
Total Revenue Bond Debt Service	\$26,347,978
Calculated DSCR - Revenue Bonds	1.73
DSCR Calculation - Revenues Bonds & General Obligation Debt	
Existing Revenue Bond Debt Service	\$25,372,978
New Revenue Bond Debt Service	\$975,000
Existing General Obligation Debt Service	\$1,340,500
New General Obligation Debt Service	\$0
Total Revenue Bond and General Obligation Debt Service	\$27,688,478
Calculated DSCR - Revenue Bonds & General Obligation Debt	1.65

Table 2-15
Water Utility Comprehensive Financial Plan 2011 - 2021 (\$ Thousands)

Metric	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
% Increase in Annual Water Rate Revenues	-----	4.0%	5.0%	8.0%	8.0%	8.0%	6.0%	5.0%	5.0%	4.0%	3.0%
Water Utility Fund Operating Surplus / (Deficit)											
Water Rate Revenue at Existing 2011 Rates	66,164.5	66,556.2	66,947.4	67,338.2	67,730.3	68,125.4	68,519.6	68,915.9	69,312.1	69,708.2	70,105.7
Incremental Revenues from Water Rate Increases	<u>0.0</u>	<u>2,662.2</u>	<u>6,159.2</u>	<u>12,077.8</u>	<u>18,538.4</u>	<u>25,588.3</u>	<u>31,391.7</u>	<u>36,597.7</u>	<u>42,114.1</u>	<u>46,837.3</u>	<u>50,620.7</u>
Total Water Rate Revenues	\$66,164.5	\$69,218.5	\$73,106.5	\$79,416.0	\$86,268.7	\$93,713.7	\$99,911.3	\$105,513.6	\$111,426.2	\$116,545.5	\$120,726.4
Total Non-Rate Revenues and Receipts	<u>4,076.5</u>	<u>4,111.2</u>	<u>4,116.5</u>	<u>4,121.8</u>	<u>4,127.1</u>	<u>4,132.4</u>	<u>4,137.7</u>	<u>4,143.1</u>	<u>4,148.5</u>	<u>4,153.8</u>	<u>4,159.2</u>
Total Revenues and Receipts	\$70,241.0	\$73,329.7	\$77,223.0	\$83,537.8	\$90,395.8	\$97,846.1	\$104,049.1	\$109,656.7	\$115,574.6	\$120,699.3	\$124,885.6
Total Operations & Maintenance Expenditures	35,899.6	38,217.3	39,311.9	40,650.9	42,166.4	43,753.9	45,418.0	47,094.0	48,747.7	50,468.4	52,191.4
Total Revenue Bond Debt Service	25,389.5	26,348.0	28,093.0	31,055.5	33,457.9	35,374.9	35,466.3	40,446.1	43,515.5	44,865.1	46,182.1
Total General Obligation Debt Service	<u>985.3</u>	<u>1,340.5</u>	<u>1,340.5</u>	<u>1,340.5</u>	<u>5,125.0</u>	<u>16,449.7</u>	<u>16,449.7</u>	<u>16,449.7</u>	<u>16,449.7</u>	<u>16,449.7</u>	<u>16,449.7</u>
Operating Surplus / (Deficit)	\$7,966.6	\$7,423.9	\$8,477.7	\$10,491.0	\$9,646.5	\$2,267.6	\$6,715.1	\$5,666.8	\$6,861.7	\$8,916.1	\$10,062.4
Transfer to the Water Improvement Fund	<u>7,500.0</u>	<u>7,100.0</u>	<u>8,300.0</u>	<u>10,200.0</u>	<u>9,400.0</u>	<u>2,000.0</u>	<u>6,500.0</u>	<u>5,400.0</u>	<u>6,500.0</u>	<u>8,700.0</u>	<u>9,700.0</u>
Net Contribution to the Water Revenue Fund	\$466.6	\$323.9	\$177.7	\$291.0	\$246.5	\$267.6	\$215.1	\$266.8	\$361.7	\$216.1	\$362.4
Water Utility Fund											
Beginning Balance	5,597.4	6,064.0	6,387.9	6,565.6	6,856.6	7,103.1	7,370.7	7,585.7	7,852.6	8,214.3	8,430.4
Net Contribution to the Water Revenue Fund	<u>466.6</u>	<u>323.9</u>	<u>177.7</u>	<u>291.0</u>	<u>246.5</u>	<u>267.6</u>	<u>215.1</u>	<u>266.8</u>	<u>361.7</u>	<u>216.1</u>	<u>362.4</u>
Ending Balance	\$6,064.0	\$6,387.9	\$6,565.6	\$6,856.6	\$7,103.1	\$7,370.7	\$7,585.7	\$7,852.6	\$8,214.3	\$8,430.4	\$8,792.7
Debt Service Coverage Calculations											
Total Water Related Revenues	\$70,241.0	\$73,329.7	\$77,223.0	\$83,537.8	\$90,395.8	\$97,846.1	\$104,049.1	\$109,656.7	\$115,574.6	\$120,699.3	\$124,885.6
Gross O&M Expenditures Before Adjustment	35,899.6	38,217.3	39,311.9	40,650.9	42,166.4	43,753.9	45,418.0	47,094.0	48,747.7	50,468.4	52,191.4
O&M Items Excluded from the DSCR Calculation	<u>10,098.8</u>	<u>10,542.6</u>	<u>10,436.3</u>	<u>10,739.4</u>	<u>11,051.9</u>	<u>11,374.2</u>	<u>11,706.7</u>	<u>12,086.6</u>	<u>12,441.5</u>	<u>12,807.7</u>	<u>13,016.7</u>
Net O&M Expenditures for DSCR Calculation	\$25,800.9	\$27,674.7	\$28,875.5	\$29,911.5	\$31,114.5	\$32,379.7	\$33,711.3	\$35,007.3	\$36,306.2	\$37,660.7	\$39,174.7
Net Revenues Available for DSCR Calculation	\$44,440.1	\$45,655.0	\$48,347.5	\$53,626.3	\$59,281.3	\$65,466.4	\$70,337.7	\$74,649.3	\$79,268.4	\$83,038.7	\$85,711.0
Total Revenue Bond Debt Service	\$25,389.5	\$26,348.0	\$28,093.0	\$31,055.5	\$33,457.9	\$35,374.9	\$35,466.3	\$40,446.1	\$43,515.5	\$44,865.1	\$46,182.1
Calculated DSCR - Revenue Bonds	1.75	1.73	1.72	1.73	1.77	1.85	1.98	1.85	1.82	1.85	1.86
Total Revenue Bond & GO Debt Service	\$26,374.7	\$27,688.5	\$29,433.5	\$32,396.0	\$38,582.9	\$51,824.6	\$51,916.0	\$56,895.8	\$59,965.2	\$61,314.8	\$62,631.9
Calculated DSCR - Revenue Bonds & GO Debt	1.68	1.65	1.64	1.66	1.54	1.26	1.35	1.31	1.32	1.35	1.37

2.9 Water Utility Revenue Requirement from Rates

An outcome of the financial planning process is a determination of the revenue requirement from water rates. The two industry accepted methods for calculating revenue requirements are the "cash needs" method and the "utility basis" method. The cash needs method expresses the revenue requirement as the total amount of rate revenue required to fund O&M expenditures and the capital costs associated with debt service expenditures and rate financed CIP. Under the cash needs method, the revenue requirement from water rates can be expressed according to the following equation:

$$RR = O\&M + DS + CIP$$

Where: RR = Revenue Requirement from Rates
 O&M = Operation and Maintenance Expenses
 DS = Debt Service Payments
 CIP = Rate Financed CIP

Alternatively, the revenue requirement can also be calculated using the utility basis method. The utility basis method expresses the revenue requirement as the amount of rate revenue required to recover the cost of O&M expenses and the capital costs associated with accrual basis depreciation and a rate of return on the assets constructed to provide utility service. Under the utility basis method, the revenue requirement from water rates can be expressed according to the following equation:

$$RR = O\&M + DEP + (ROR * RB)$$

Where: RR = Revenue Requirement from Rates
 O&M = Operation and Maintenance Expenses
 DEP = Depreciation Expenses
 ROR = Rate-of-Return on Capital Invested in Utility Assets
 RB = Net Book Value of Utility Assets (Rate Base)

The utility basis method of revenue requirement calculation is commonly used by investor-owned utilities because it features a rate-of-return on invested capital component. This allows utility investors to earn a return on the equity and debt capital they invested to construct utility assets. These invested assets are commonly referred to as the "rate base" assets of the utility because they play a critical role in defining the level of rates paid by customers.

The utility basis method is also used by publicly-owned municipal utilities that provide service to customers in adjoining outside city jurisdictions. Conceptually, inside city customers are viewed as the owners of the municipal utility that provides service to outside city customers. As a result, inside city customer must earn a return on the capital they invested to provide utility service to outside city customers. Because the City provides service to outside city customers, RFC used the utility method of revenue requirement calculation in the water cost of service study as described in Section 3 of this report.

Table 2-16 shows the 2012 - 2016 water utility revenue requirement under both the cash needs and utility basis methods. The depreciation expense shown in Table 2-16 was estimated by RFC based on the combined water and sewer utility depreciation expense as reported in the City's 2010 Comprehensive Annual Financial Report. This amount was allocated between the water and sewer utilities based on the gross book value of water and

sewer utility assets on December 31, 2010. The forecast net book value of water utility assets shown in Table 2-16 is based on an analysis by RFC that took into consideration the net book value of water utility assets at December 31, 2010, water utility construction work in progress at December 31, 2010, and forecast water CIP expenditures during the period 2011 - 2016.

Table 2-16 Forecast Water Utility Revenue Requirement from Rates 2012 - 2016 (\$ Thousands)					
Cash Needs Method of Revenue Requirement Calculation					
Metric	2012	2013	2014	2015	2016
Operations and Maintenance Expenditures					
Water Administration	10,062.7	10,638.4	11,026.3	11,555.1	12,118.9
Water Customer Service	1,816.9	1,869.3	1,934.9	2,003.2	2,074.3
Water Distribution	11,718.7	12,173.3	12,586.5	13,015.8	13,461.9
Water Production	<u>14,619.1</u>	<u>14,630.9</u>	<u>15,103.2</u>	<u>15,592.3</u>	<u>16,098.8</u>
Total Operations and Maintenance Expenditures	\$38,217.3	\$39,311.9	\$40,650.9	\$42,166.4	\$43,753.9
Debt Service					
Total Existing Revenue Bond Debt Service	25,373.0	24,194.5	24,196.9	24,286.6	24,364.3
Total New Revenue Bond Debt Service	975.0	3,898.5	6,858.5	9,171.3	11,010.6
Total New General Obligation Debt Service	1,340.5	1,340.5	1,340.5	5,125.0	16,449.7
Total New General Obligation Debt Service	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total Debt Service Expenditures	\$27,688.5	\$29,433.5	\$32,396.0	\$38,582.9	\$51,824.6
Contributions to Funds					
Contribution to Water Improvement Fund	7,100.0	8,300.0	10,200.0	9,400.0	2,000.0
Contribution to Water Revenue Fund	<u>323.9</u>	<u>177.7</u>	<u>291.0</u>	<u>246.5</u>	<u>267.6</u>
Total Contributions	\$7,423.9	\$8,477.7	\$10,491.0	\$9,646.5	\$2,267.6
Total Revenue Requirement Before Non-Rate Offsets	\$73,329.7	\$77,223.0	\$83,537.8	\$90,395.8	\$97,846.1
Total Non-Rate Revenues / Receipts	\$4,111.2	\$4,116.5	\$4,121.8	\$4,127.1	\$4,132.4
Net Revenue Requirement from Rates	\$69,218.5	\$73,106.5	\$79,416.0	\$86,268.7	\$93,713.7
Utility Method of Revenue Requirement Calculation					
Metric	2012	2013	2014	2015	2016
Operations and Maintenance Expenditures	38,217.3	39,311.9	40,650.9	42,166.4	43,753.9
Depreciation Expense	12,071.0	12,768.7	13,506.8	14,287.5	15,113.4
Rate of Return on Rate Base	<u>18,930.1</u>	<u>21,025.9</u>	<u>25,258.3</u>	<u>29,814.8</u>	<u>34,846.4</u>
Total Revenue Requirement from Rates	\$69,218.5	\$73,106.5	\$79,416.0	\$86,268.7	\$93,713.7
Average Net Book Value of Water Utility Assets	\$587,047.5	\$620,980.3	\$656,874.4	\$694,843.4	\$735,007.1
Implied Required Rate of Return on Water Utility Assets	3.22%	3.39%	3.85%	4.29%	4.74%

Section 3: Water Utility Cost of Service Study

After forecasting the water utility 2012 revenue requirement from rates as shown in Table 2-16, a cost of service study is conducted to determine the amount of revenue that must be recovered from each customer class based upon their forecast 2012 water consumption characteristics. To accomplish this objective, RFC engaged in a multi-step cost allocation process and conducted an analysis of historical customer class consumption characteristics as described below. The cost of service procedures followed by RFC were based on industry standard methodologies as published by the AWWA in the "Manual of Water Supply Practices M1, Principles of Water Rates, Fees, and Charges."

3.1 Allocation of the O&M Revenue Requirement to Functional Activities

The first step in the cost allocation process assigns forecast 2012 O&M revenue requirement to the functional cost categories for which the expenditures will be incurred. For water utilities, these functional cost categories generally include: source of supply; treatment; pumping; transmission and distribution; customer service; and administration. The City did not develop the water utility's approved 2012 O&M budget on a functional basis. However, the City's financial accounting system does assign O&M expenditures to functional cost centers after they are incurred. Therefore, in order to assign the approved 2012 O&M revenue requirement to the appropriate functional categories for the cost of service study, RFC analyzed historical water utility O&M expenditure patterns and consulted with water utility divisional managers regarding their best estimate of functionalized 2012 O&M expenditures. The results of this process are shown in Table 3-1.

3.2 Classification of the O&M Revenue Requirement to Cost Components

Once the appropriate functional cost assignments have been made, the costs included in the forecast 2012 O&M revenue requirement must be classified to specific cost components based on the engineering design and/or operational purpose for which the expenditures will be incurred. For the water utility cost of service study, RFC utilized the industry standard "base extra capacity method" of cost classification as discussed in Chapters 7 and 8 of the fifth edition of the AWWA publication "Manual of Water Supply Practices M1, Principles of Water Rates, Fees, and Charges."

Under the base extra capacity method, costs are classified to one of the following general cost components: 1) base water demand which reflects demand under average load conditions; 2) maximum hour and maximum day extra capacity demand which reflects water demand under peak load conditions; 3) customer service functions related to meters or billing and collection; and, 4) direct fire protection costs associated with private fire lines and/or public fire hydrants. Table 3-2 illustrates the classification of the water utility O&M revenue requirement to specific cost components.

Table 3-1
Forecast of 2012 Water Utility O&M Expenditures by Functional Cost Center

Division	Functional Cost Center Description	Expense Description	Amount
Administration	Water Administration	City Administrative Charges	\$1,055,210
Administration	Water Administration	Bad Debt Expense	\$433,000
Administration	Water Administration	Clean Water Drinking Fee	\$600,000
Administration	Water Administration	Reimbursement from Sewer	(\$252,941)
Administration	Water Administration	Contributions to Other Funds	\$2,448,610
Administration	Water Administration	Reimbursements to Other Departments	\$969,397
Administration	Water Administration	Contingency	\$1,000,000
Administration	Water Administration	Franchise Taxes	\$3,270,780
Administration	Water Administration	All Other Expenditures	<u>\$538,658</u>
			\$10,062,714
Customer Service	Water Customer Service Administration	Reimbursement from Sewer Utility- Salaries & Benefits	(\$2,068,557)
Customer Service	Water Customer Service Administration	Reimbursement from Sewer Utility- Contractuals	(\$1,067,623)
Customer Service	Water Customer Service Administration	Reimbursement from Sewer Utility- Commodities	(\$159,816)
Customer Service	Water Customer Service Administration	All Other Expenditures	\$3,082,338
Customer Service	General Accounting	All Expenditures	\$264,641
Customer Service	Billing Services	All Expenditures	\$78,710
Customer Service	Customer Contacts & Inquiries	All Expenditures	<u>\$1,687,164</u>
			\$1,816,857
Distribution	Water Distribution & Administration	Dirt and Pavement Cuts	\$692,960
Distribution	Water Distribution & Administration	Fuel	\$216,077
Distribution	Water Distribution & Administration	Water Distribution System Parts	\$216,814
Distribution	Water Distribution & Administration	Materials	\$350,247
Distribution	Water Distribution & Administration	All Other Expenditures	\$3,181,229
Distribution	Inventory	All Expenditures	(\$132,193)
Distribution	Mains Maintenance	All Expenditures	\$767,998
Distribution	Fire hydrant repair parts	All Expenditures	\$8,688
Distribution	Services & Set Repairs	All Expenditures	\$538,028
Distribution	Troubleshooting	All Expenditures	\$133
Distribution	Cross Connection	All Expenditures	\$314,004
Distribution	Building Equipment & Maintenance	All Expenditures	\$360,424
Distribution	Dispatch	All Expenditures	\$189,121
Distribution	Services & Meter Sets - Customer Paid	All Expenditures	\$962,182
Distribution	Services & Meter Sets - Utility Paid	All Expenditures	\$212,394
Distribution	Lead Service Replacements	All Expenditures	\$100,131
Distribution	Mains & Valves Replacement / Relocation	All Expenditures	\$469,816
Distribution	Meter Replacements	All Expenditures	\$214,379
Distribution	Hydrants	All Expenditures	\$177,339
Distribution	Meter Reading	All Expenditures	\$1,398,223
Distribution	Turn On & Off (Water Line Tech)	All Expenditures	\$1,196,967
Distribution	Meter Test & Repair (Meter Shop)	All Expenditures	<u>\$283,693</u>
			\$11,718,653
Production & Pumping	Cheney Reservoir	Salaries and Benefits	\$268,921
Production & Pumping	Cheney Reservoir	Electricity	\$330,441
Production & Pumping	Cheney Reservoir	All Other Expenditures	\$73,706
Production & Pumping	Equus Beds General Maintenance	Salaries and Benefits	\$686,088
Production & Pumping	Equus Beds General Maintenance	Electricity	\$1,160,858
Production & Pumping	Equus Beds General Maintenance	All Other Expenditures	\$269,393
Production & Pumping	ASR Well Field Operations	Salaries and Benefits	\$276,504
Production & Pumping	ASR Well Field Operations	Electricity	\$700,000
Production & Pumping	ASR Well Field Operations	Chemicals	\$300,000
Production & Pumping	ASR Well Field Operations	All Other Expenditures	\$49,073
Production & Pumping	Treatment Plant Maintenance	All Expenditures	\$1,090,527
Production & Pumping	Treatment Plant System Operations	All Expenditures	\$1,034,331
Production & Pumping	Treatment Plant Chemicals	All Expenditures (Industrial Chemicals)	\$2,312,274
Production & Pumping	Local Wellfield General Maintenance	All Expenditures	\$37,796
Production & Pumping	Water Bacteriologist	All Expenditures	\$190,675
Production & Pumping	Laboratory Water Analysis	All Expenditures	\$773,977
Production & Pumping	Hess Pump Station	Electricity	\$1,762,259
Production & Pumping	Hess Pump Station	All Other Expenditures	\$303,925
Production & Pumping	Booster Stations	All Expenditures	\$318,834
Production & Pumping	Production and Pumping Administration	Other professional services	\$1,681,005
Production & Pumping	Production and Pumping Administration	All Other Expenditures	<u>\$998,510</u>
			\$14,619,098
		Total Forecast 2012 O&M Expenditures	\$38,217,322

Table 3-2
Base Extra Capacity Classification of the 2012 Water Utility O&M Revenue Requirement (\$ Thousands)

Functional Cost Center	Expense	Total	Common to All Customers (Retail and Wholesale)					Retail Customers Only					
			Base Demand	Max Day Extra Capacity Demand	Max Hour Extra Capacity Demand	Equivalent Meters & Services	Bills	Base Demand	Max Day Extra Capacity Demand	Max Hour Extra Capacity Demand	Equivalent Private Fire Protection Connections	Bills	Public Fire Hydrants
Reservoirs													
Cheney Reservoir	Salaries & Benefits	268.9	268.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cheney Reservoir	Electricity	330.4	330.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cheney Reservoir	All Other Exp.	73.7	73.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Production & Pumping Administration	All Other Exp.	49.3	49.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Reservoirs		\$722.4	\$722.4	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Wells													
Equus Beds General Maintenance	Salaries & Benefits	686.1	343.0	343.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Equus Beds General Maintenance	Electricity	1,160.9	580.4	580.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Equus Beds General Maintenance	All Other Exp.	269.4	134.7	134.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ASR Well Field Operations	Salaries and Benefits	276.5	138.3	138.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ASR Well Field Operations	Electricity	700.0	350.0	350.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ASR Well Field Operations	Chemicals	300.0	150.0	150.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ASR Well Field Operations	All Other Expenditures	49.1	24.5	24.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prod. & Pumping Administration	Other Professional Services	1,681.0	840.5	840.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Local Wellfield General Maintenance	All Expenditures	37.8	18.9	18.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Production & Pumping Administration	All Other Expenditures	378.3	189.2	189.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Wells		\$5,539.0	\$2,769.5	\$2,769.5	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Treatment													
Treatment Plant Maintenance	All Expenditures	1,090.5	617.1	473.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Treatment Plant System Operations	All Expenditures	1,034.3	585.3	449.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Treatment Plant Chemicals	Industrial Chemicals	2,312.3	1,308.4	1,003.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Water Bacteriologist	All Expenditures	190.7	107.9	82.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Laboratory Water Analysis	All Expenditures	774.0	437.9	336.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prod. & Pumping Admin.	All Other Expenditures	396.0	224.1	171.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Treatment		\$5,797.8	\$3,280.6	\$2,517.2	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Pumping													
Hess Pump Station	Electricity	1,762.3	492.9	378.2	891.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hess Pump Station	All Other Expenditures	303.9	85.0	65.2	153.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Booster Stations	All Expenditures	318.8	89.2	68.4	161.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prod. & Pumping Admin.	All Other Expenditures	174.8	48.9	37.5	88.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Pumping		\$2,559.9	\$716.0	\$549.4	\$1,294.4	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0

Table 3-2 - Continued													
Base Extra Capacity Classification of the 2012 Water Utility O&M Revenue Requirement (\$ Thousands)													
Functional Cost Center	Expense	Total	Common to All Customers (Retail and Wholesale)					Retail Customers Only					
			Base Demand	Max Day Extra Capacity Demand	Max Hour Extra Capacity Demand	Equivalent Meters & Services	Bills	Base Demand	Max Day Extra Capacity Demand	Max Hour Extra Capacity Demand	Equivalent Private Fire Protection Connections	Bills	Public Fire Hydrants
Distribution													
Inventory	All Expenditures	(132.2)	0.0	0.0	0.0	0.0	0.0	(37.0)	(28.4)	(66.8)	0.0	0.0	0.0
Mains Maintenance	All Expenditures	1,804.5	0.0	0.0	0.0	0.0	0.0	504.7	387.3	912.5	0.0	0.0	0.0
Fire Hydrant Repair Parts	All Expenditures	20.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	19.4
Services & Set Repairs	All Expenditures	1,264.1	0.0	0.0	0.0	0.0	0.0	353.6	271.3	639.2	0.0	0.0	0.0
Troubleshooting	All Expenditures	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Cross Connection	All Expenditures	314.0	0.0	0.0	0.0	0.0	0.0	87.8	67.4	158.8	0.0	0.0	0.0
Building Equipment & Maintenance	All Expenditures	360.4	0.0	0.0	0.0	0.0	0.0	100.8	77.4	182.3	0.0	0.0	0.0
Dispatch	All Expenditures	189.1	0.0	0.0	0.0	0.0	0.0	52.9	40.6	95.6	0.0	0.0	0.0
Services & Meter Sets - Customer Paid	All Expenditures	2,260.7	0.0	0.0	0.0	2,260.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Services & Meter Sets - Utility Paid	All Expenditures	499.0	0.0	0.0	0.0	499.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lead Service Replacements	All Expenditures	235.3	0.0	0.0	0.0	0.0	0.0	65.8	50.5	119.0	0.0	0.0	0.0
Mains & Valves Replace / Relocation	All Expenditures	1,103.9	0.0	0.0	0.0	0.0	0.0	308.8	236.9	558.2	0.0	0.0	0.0
Meter Replacements	All Expenditures	503.7	0.0	0.0	0.0	503.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydrants	All Expenditures	<u>416.7</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>20.8</u>	<u>0.0</u>	<u>395.8</u>
Total Distribution		\$8,839.8	\$0.0	\$0.0	\$0.0	\$3,263.5	\$0.0	\$1,437.5	\$1,103.0	\$2,598.7	\$21.9	\$0.0	\$415.2
Customer Service													
Water Customer Service Administration	From Sewer - Salaries & Benefits	(2,068.6)	0.0	0.0	0.0	(623.9)	(1,427.3)	0.0	0.0	0.0	0.0	(17.3)	0.0
Water Customer Service Administration	From Sewer - Contractuals	(1,067.6)	0.0	0.0	0.0	(322.0)	(736.7)	0.0	0.0	0.0	0.0	(8.9)	0.0
Water Customer Service Administration	From Sewer - Commodities	(159.8)	0.0	0.0	0.0	(48.2)	(110.3)	0.0	0.0	0.0	0.0	(1.3)	0.0
Water Customer Service Administration	All Other Expenditures	3,082.3	0.0	0.0	0.0	929.6	2,126.9	0.0	0.0	0.0	0.0	25.8	0.0
General Accounting	All Expenditures	264.6	0.0	0.0	0.0	0.0	261.5	0.0	0.0	0.0	0.0	3.2	0.0
Billing Services	All Expenditures	78.7	0.0	0.0	0.0	0.0	77.8	0.0	0.0	0.0	0.0	0.9	0.0
Customer Contacts & Inquiries	All Expenditures	1,687.2	0.0	0.0	0.0	0.0	1,666.9	0.0	0.0	0.0	0.0	20.2	0.0
Meter Reading	All Expenditures	1,398.2	0.0	0.0	0.0	0.0	1,381.4	0.0	0.0	0.0	0.0	16.8	0.0
Turn On & Off	All Expenditures	1,197.0	0.0	0.0	0.0	1,197.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Meter Test & Repair	All Expenditures	<u>283.7</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>283.7</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total Customer Service		\$4,695.7	\$0.0	\$0.0	\$0.0	\$1,416.2	\$3,240.2	\$0.0	\$0.0	\$0.0	\$0.0	\$39.4	\$0.0
Water Administration													
Water Administration	City Administrative Charges	1,055.2	280.7	218.7	48.5	175.4	121.4	53.9	41.3	97.4	0.8	1.5	15.6
Water Administration	Bad Debt Expense	433.0	0.0	0.0	0.0	0.0	0.0	121.1	92.9	219.0	0.0	0.0	0.0
Water Administration	Clean Water Drinking Fee	600.0	159.6	124.4	27.6	99.7	69.1	30.6	23.5	55.4	0.5	0.8	8.8
Water Administration	Reimbursement from Sewer	(252.9)	(67.3)	(52.4)	(11.6)	(42.0)	(29.1)	(12.9)	(9.9)	(23.3)	(0.2)	(0.4)	(3.7)
Water Administration	Contributions to Other Funds	2,448.6	651.3	507.6	112.6	407.0	281.8	125.0	95.9	226.0	1.9	3.4	36.1
Water Administration	Reimbursements to Other Depart.	969.4	257.8	200.9	44.6	161.1	111.6	49.5	38.0	89.5	0.8	1.4	14.3
Water Administration	Contingency	1,000.0	266.0	207.3	46.0	166.2	115.1	51.1	39.2	92.3	0.8	1.4	14.7
Water Administration	Franchise Taxes	3,270.8	0.0	0.0	0.0	0.0	0.0	914.9	702.0	1,653.9	0.0	0.0	0.0
Water Administration	All Other Expenditures	<u>538.7</u>	<u>143.3</u>	<u>111.7</u>	<u>24.8</u>	<u>89.5</u>	<u>62.0</u>	<u>27.5</u>	<u>21.1</u>	<u>49.7</u>	<u>0.4</u>	<u>0.8</u>	<u>7.9</u>
Total Water Administration		\$10,062.7	\$1,691.3	\$1,318.1	\$292.4	\$1,056.9	\$731.8	\$1,360.7	\$1,044.0	\$2,459.8	\$4.9	\$8.9	\$93.8
Total O&M Expenditures		\$38,217.3	\$9,179.9	\$7,154.2	\$1,586.8	\$5,736.6	\$3,972.0	\$2,798.2	\$2,147.0	\$5,058.6	\$26.8	\$48.2	\$509.0

3.3 Allocation of the Water Utility Assets to Functional Activities

The next step in the cost of service process is the allocation of the forecast 2012 depreciation expense revenue requirement to functional cost categories. To achieve this objective, RFC developed a forecast of 2012 water utility fixed assets, by functional category, as shown in Table 3-3. This forecast was developed based on an analysis of water utility property accounting records on December 31, 2010, water utility construction work in progress at December 31, 2010, and forecast water utility CIP expenditures during 2011 and 2012.

Asset Function	Asset Type	Net Book Value at 12/31/10	Net Book Value at 12/31/11	Net Book Value at 12/31/12
Water Administration	Land	6,285,145	6,589,163	6,788,148
Water Administration	Structures and Improvements	7,948,193	7,944,349	7,791,357
Water Administration	General Equipment	<u>645,718</u>	<u>189,291</u>	<u>5,716</u>
		\$14,879,055	\$14,722,803	\$14,585,222
Source of Supply	Reservoirs - Land	32,132	33,686	34,703
Source of Supply	Reservoir - Structures and Improvements	9,774,116	9,819,010	9,678,463
Source of Supply	Reservoir - General Equipment	23,575	17,890	11,586
Source of Supply	Reservoir - Pumping Equipment	1,472,483	1,450,020	1,398,700
Source of Supply	Reservoir - Treatment Equipment	<u>230,693</u>	<u>217,226</u>	<u>198,622</u>
		\$11,532,998	\$11,537,833	\$11,322,074
Source of Supply	Wells - Land	597,073	625,954	644,857
Source of Supply	Wells - Structures and Improvements	18,618,491	19,067,743	19,180,208
Source of Supply	Wells - General Equipment	581,296	413,741	228,929
Source of Supply	Wells - Pumping, Monitoring, Treatment	<u>24,843,661</u>	<u>25,363,701</u>	<u>25,432,364</u>
		\$44,640,520	\$45,471,139	\$45,486,359
Pumping	Structures and Improvements	612,740	620,804	617,456
Pumping	General Equipment	31,613	22,737	12,924
Pumping	Other Pumping Equipment	437,121	290,132	129,851
Pumping	Electric Pumping Equipment	<u>3,034,385</u>	<u>2,941,888</u>	<u>2,789,124</u>
		\$4,115,859	\$3,875,560	\$3,549,354
Transmission & Distribution	Land	1,631,973	1,710,913	1,762,581
Transmission & Distribution	Structures & Improvements	5,912,450	5,414,419	4,780,088
Transmission & Distribution	General Equipment	1,881,535	1,537,207	1,144,270
Transmission & Distribution	Transmission Mains	110,526,153	113,789,424	115,091,711
Transmission & Distribution	Distribution Mains	162,782,796	168,558,410	171,501,329
Transmission & Distribution	Distribution Storage	2,098,435	2,109,629	2,080,920
Transmission & Distribution	Meters	7,698,617	7,404,123	6,954,114
Transmission & Distribution	Services	27,395,003	27,859,007	27,823,736
Transmission & Distribution	Hydrants	<u>5,681,157</u>	<u>5,797,018</u>	<u>5,810,592</u>
		\$325,608,120	\$334,180,150	\$336,949,340
Treatment	Treatment Equipment	3,466,171	3,438,714	3,344,570
Treatment	General Equipment	490,758	237,378	7,169
Treatment	Land	1,361,646	1,427,510	1,470,619
Treatment	Structures and Improvements	<u>16,690,388</u>	<u>16,156,316</u>	<u>15,278,861</u>
		\$22,008,963	\$21,259,918	\$20,101,218
	Construction Work in Progress	\$158,948,808	\$164,532,617	\$146,521,323
	Total Water Assets	\$581,734,323	\$595,580,020	\$578,514,891

3.4 Classification of Water Utility Assets and the Depreciation Revenue Requirement to Cost Components

Once the appropriate functional cost assignments have been made, water utility fixed assets can be classified to specific base extra capacity cost components according to the engineering design and/or operational purpose for which they are, or will be, constructed. Table 3-4 shows this classification which can also be used to classify the 2012 depreciation expense component of the water utility revenue requirement to specific base extra capacity cost components as shown in Table 3-5.

Table 3-4
Base Extra Capacity Classification of Forecast 2012 Water Utility Net Fixed Assets (\$ Thousands)

Functional Cost Center	Total	Common to All Customers (Retail and Wholesale)					Retail Customers Only					
		Base Demand	Max Day Extra Capacity Demand	Max Hour Extra Capacity Demand	Equivalent Meters & Services	Bills	Base Demand	Max Day Extra Capacity Demand	Max Hour Extra Capacity Demand	Equivalent Private Fire Protection Connections	Bills	Public Fire Hydrants
Source of Supply												
Reservoirs - Land	34.2	34.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reservoir - Struc. & Improvements	9,748.7	9,748.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reservoir - General Equipment	14.7	14.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reservoir - Pumping Equipment	1,424.4	1,424.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reservoir - Treatment Equipment	<u>207.9</u>	<u>207.9</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
	\$11,430.0	\$11,430.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Wells - Land	635.4	317.7	317.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wells - Structures and Improvements	19,124.0	9,562.0	9,562.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wells - General Equipment	321.3	160.7	160.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wells - Pumping, Monitoring, Treatment	<u>25,398.0</u>	<u>12,699.0</u>	<u>12,699.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
	\$45,478.7	\$22,739.4	\$22,739.4	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Treatment												
Treatment Equipment	3,391.6	1,919.1	1,472.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
General Equipment	122.3	69.2	53.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Land	1,449.1	819.9	629.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Structures and Improvements	<u>15,717.6</u>	<u>8,893.6</u>	<u>6,824.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
	\$20,680.6	\$11,701.8	\$8,978.7	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Pumping												
Structures and Improvements	619.1	173.2	132.9	313.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
General Equipment	17.8	5.0	3.8	9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Pumping Equipment	210.0	58.7	45.1	106.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electric Pumping Equipment	<u>2,865.5</u>	<u>801.5</u>	<u>615.0</u>	<u>1,449.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
	\$3,712.5	\$1,038.4	\$796.8	\$1,877.3	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Transmission & Distribution												
Land	1,736.7	0.0	0.0	0.0	0.0	0.0	485.8	372.7	878.2	0.0	0.0	0.0
Structures & Improvements	5,097.3	0.0	0.0	0.0	0.0	0.0	1,425.8	1,094.0	2,577.5	0.0	0.0	0.0
General Equipment	1,340.7	0.0	0.0	0.0	0.0	0.0	375.0	287.8	678.0	0.0	0.0	0.0
Transmission Mains	114,440.6	64,754.7	49,685.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Distribution Mains	170,029.9	0.0	0.0	0.0	0.0	0.0	47,559.4	36,492.1	85,978.4	0.0	0.0	0.0
Distribution Storage	2,095.3	0.0	0.0	0.0	0.0	0.0	586.1	449.7	1,059.5	0.0	0.0	0.0
Meters	7,179.1	0.0	0.0	0.0	7,179.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Services	27,841.4	0.0	0.0	0.0	0.0	0.0	7,787.6	5,975.4	14,078.5	0.0	0.0	0.0
Hydrants	<u>5,803.8</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>5,803.8</u>
	\$335,564.7	\$64,754.7	\$49,685.9	\$0.0	\$7,179.1	\$0.0	\$58,219.6	\$44,671.6	\$105,250.1	\$0.0	\$0.0	\$5,803.8
Administration												
Land	6,688.7	1,791.7	1,318.9	30.1	115.2	0.0	934.1	716.8	1,688.7	0.0	0.0	93.1
Structures and Improvements	7,867.9	2,107.5	1,551.4	35.4	135.5	0.0	1,098.8	843.1	1,986.5	0.0	0.0	109.5
General Equipment	<u>97.5</u>	<u>26.1</u>	<u>19.2</u>	<u>0.4</u>	<u>1.7</u>	<u>0.0</u>	<u>13.6</u>	<u>10.4</u>	<u>24.6</u>	<u>0.0</u>	<u>0.0</u>	<u>1.4</u>
	\$14,654.0	\$3,925.3	\$2,889.6	\$66.0	\$252.4	\$0.0	\$2,046.6	\$1,570.3	\$3,699.8	\$0.0	\$0.0	\$204.0
Total Assets in Service	431,520.5	115,589.6	85,090.4	1,943.3	7,431.5	0.0	60,266.2	46,241.9	108,949.9	0.0	0.0	6,007.8
Construction Work in Progress	<u>155,527.0</u>	<u>116,645.2</u>	<u>19,440.9</u>	<u>19,440.9</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total Water Assets	\$587,047.5	\$232,234.8	\$104,531.2	\$21,384.1	\$7,431.5	\$0.0	\$60,266.2	\$46,241.9	\$108,949.9	\$0.0	\$0.0	\$6,007.8

Functional Cost Center	Total	Common to All Customers (Retail and Wholesale)					Retail Customers Only					
		Base Demand	Max Day Extra Capacity Demand	Max Hour Extra Capacity Demand	Equivalent Meters & Services	Bills	Base Demand	Max Day Extra Capacity Demand	Max Hour Extra Capacity Demand	Equivalent Private Fire Protection Connections	Bills	Public Fire Hydrants
Source of Supply												
Reservoirs - Land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reservoir - Struc. & Improvements	437.1	437.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reservoir - General Equipment	6.8	6.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reservoir - Pumping Equipment	95.1	95.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reservoir - Treatment Equipment	<u>25.2</u>	<u>25.2</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
	\$564.2	\$564.2	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Wells - Land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wells - Structures and Improvements	463.4	231.7	231.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wells - General Equipment	197.3	98.7	98.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wells - Pumping, Monitoring, Treatment	<u>697.3</u>	<u>348.6</u>	<u>348.6</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
	\$1,358.0	\$679.0	\$679.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Treatment												
Treatment Equipment	198.0	112.0	86.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
General Equipment	237.4	134.3	103.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Structures and Improvements	<u>1,365.4</u>	<u>772.6</u>	<u>592.8</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
	\$1,800.7	\$1,018.9	\$781.8	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Pumping												
Structures and Improvements	22.1	6.2	4.7	11.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
General Equipment	10.5	2.9	2.3	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Pumping Equipment	169.0	47.3	36.3	85.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electric Pumping Equipment	<u>241.6</u>	<u>67.6</u>	<u>51.9</u>	<u>122.2</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
	\$443.2	\$124.0	\$95.1	\$224.1	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Transmission & Distribution												
Land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Structures & Improvements	797.8	0.0	0.0	0.0	0.0	0.0	223.2	171.2	403.4	0.0	0.0	0.0
General Equipment	439.4	0.0	0.0	0.0	0.0	0.0	122.9	94.3	222.2	0.0	0.0	0.0
Transmission Mains	2,134.0	1,207.5	926.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Distribution Mains	2,147.4	0.0	0.0	0.0	0.0	0.0	600.6	460.9	1,085.8	0.0	0.0	0.0
Distribution Storage	92.4	0.0	0.0	0.0	0.0	0.0	25.9	19.8	46.7	0.0	0.0	0.0
Meters	673.6	0.0	0.0	0.0	673.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Services	876.6	0.0	0.0	0.0	0.0	0.0	245.2	188.1	443.3	0.0	0.0	0.0
Hydrants	<u>161.5</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>161.5</u>
	\$7,322.7	\$1,207.5	\$926.5	\$0.0	\$673.6	\$0.0	\$1,217.7	\$934.4	\$2,201.5	\$0.0	\$0.0	\$161.5
Administration												
Land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Structures and Improvements	392.9	105.2	77.5	1.8	6.8	0.0	54.9	42.1	99.2	0.0	0.0	5.5
General Equipment	<u>189.3</u>	<u>50.7</u>	<u>37.3</u>	<u>0.9</u>	<u>3.3</u>	<u>0.0</u>	<u>26.4</u>	<u>20.3</u>	<u>47.8</u>	<u>0.0</u>	<u>0.0</u>	<u>2.6</u>
	\$582.2	\$155.9	\$114.8	\$2.6	\$10.0	\$0.0	\$81.3	\$62.4	\$147.0	\$0.0	\$0.0	\$8.1
Total Depreciation	\$12,071.0	\$3,749.5	\$2,597.2	\$226.8	\$683.6	\$0.0	\$1,299.1	\$996.8	\$2,348.4	\$0.0	\$0.0	\$169.6

3.5 Estimation of 2012 Customer Water Consumption Capacity Factors

After classifying the 2012 O&M and depreciation revenue requirements into specific base extra capacity cost components, they must be allocated to specific customer classes. This requires an estimation of the 2012 maximum day and maximum hour capacity factors (also known as peaking factors) for each customer class. Due to the higher peak demands they impose on a water utility system, customer classes that have higher maximum day and maximum hour capacity factors are generally allocated a larger proportional share of the water utility revenue requirement. The approach employed by RFC to estimate customer class capacity factors generally follows the methodology described in Appendix A of the fifth edition of the AWWA *"Manual of Water Supply Practices M1, Principles of Water Rates, Fees, and Charges."*

The first step in estimating the maximum day and maximum hour capacity factors for each customer class was to estimate the 2012 coincident maximum day capacity factor for the entire water utility. This process, which results in a 1.26 total system maximum day capacity factor, is based on actual 2009 and 2010 demand data as shown in Table 3-6.

Table 3-6 Calculation of Estimated 2012 Water Utility Coincident Maximum Day Capacity Factor						
Year (1)	System Maximum Day Coincident Demand		System Maximum Month Coincident Demand		System Coincident Average Day Demand in the Maximum Month (Gallons) (6)	Ratio of Coincident Maximum Day Demand to Average Day Demand in the Maximum Month (7)
	Gallons (2)	Date of Occurrence (3)	Gallons (4)	Month (5)		
2010	101,820,000	08/09/10	2,605,470,000	August 2010	84,047,419	1.21
2009	96,540,000	06/26/09	2,299,410,000	July 2009	74,174,516	1.30
System Coincident Maximum Day Capacity Factor						1.26

After estimating total system coincident maximum day as shown in Table 3-6, non-coincident demand data was obtained for each individual customer class. Table 3-7 illustrates this non-coincident data for inside city residential domestic water customers and shows the calculation of their estimated 1.96 maximum day capacity factor (Column 9). The computation illustrated in Table 3-7 adjusts the non-coincident maximum day capacity factors for residential customers (Column 7) by the coincident system maximum day capacity factor (Column 8) to develop an estimate of the residential customer class contribution to coincident system-wide maximum day demand (Column 9). A similar process was used to estimate the maximum day capacity factors for each water utility customer class.

Table 3-7 Calculation of the Estimated 2012 Maximum Day Capacity Factor for Inside City Residential Domestic Water Customers								
Year (1)	Residential Maximum Month Demand (Gallons) (2)	Max Month (3)	Residential Average Day Demand in the Maximum Month (Gallons) (4)	Residential Annual Demand (Gallons) (5)	Residential Annual Average Day Demand (Gallons) (6)	Ratio of Residential Avg. Day Demand in the Maximum Month to Annual Avg. Day Demand (7)	System Ratio of Coincident Maximum Day Demand to Average Day Demand in the Maximum Month (8)	Calculated Residential Maximum Day Capacity Factor 9 = (7 * 8)
2010	1,206,680,077	August	38,925,164	9,031,587,850	24,744,076	1.57	1.26	1.98
2009	1,022,760,752	June	32,992,282	8,727,538,650	23,911,065	1.38	1.26	1.73
Residential Inside City Domestic Maximum Day Capacity Factor								1.96

To estimate the appropriate maximum hour capacity factors for each customer class, an estimate of the 2009 and 2010 total system maximum hour coincident demand was obtained

from City Staff. This data was used in the manner shown in Table 3-8 to estimate the 2.02 coincident system maximum hour capacity factor (Column 7).

Table 3-8 Calculation of the Estimated 2012 Water Utility Coincident Maximum Hour Capacity Factor						
Year (1)	System Maximum Month Coincident Demand		Average Day Demand in Maximum Month (Gallons) (4)	Coincident Maximum Hour Demand (Gallons) (5)	Date of Occurrence (6)	Ratio of System Maximum Hour Demand to Average Day Demand in the Maximum Month (7)
	Gallons (2)	Max Month (3)				
2010	2,605,470,000	August 2010	84,047,419	169,500,000	08/11/10	2.02
2009	2,299,410,000	July 2009	74,174,516	150,510,000	07/29/09	2.03
System Coincident Maximum Hour Capacity Factor						2.02

After estimating the system coincident maximum hour capacity factor, this metric can be used to develop maximum hour capacity factors for individual customer classes. Table 3-9 shows the calculation of the 3.34 residential maximum hour capacity factor for inside city residential domestic water customers (Column 8). The computation in Table 3-9 adjusts the non-coincident maximum day capacity factors for inside city residential domestic water customers (Column 6) by the coincident system maximum hour capacity factor of 2.02 (Column 7) to develop an estimate of the residential customer class contribution to coincident system-wide maximum hour demand (Column 8). A similar process was used to estimate the maximum hour capacity factors for all other water utility customer classes.

Table 3-9 Calculation of the Estimated 2012 Maximum Hour Capacity Factor for Inside City Residential Domestic Water Customers							
Year (1)	Residential Maximum Month Demand (Gallons) (2)	Residential Average Day in the Maximum Month (Gallons) (3)	Residential Annual Demand (Gallons) (4)	Residential Annual Average Day Demand (Gallons) (5)	Residential Ratio of the Avg. Day in the Maximum Mo. to Annual Avg. Day Demand (6)	Ratio of System Maximum Hour Demand to Average Day Demand in the Maximum Month (7)	Calculated Residential Maximum Hour Capacity Factor (8)
2010	1,206,680,077	38,925,164	9,031,587,850	24,744,076	1.57	2.02	3.18
2009	1,022,760,752	32,992,282	8,727,538,650	23,911,065	1.38	2.02	3.51
Residential Inside City Domestic Maximum Hour Capacity Factor							3.34

Table 3-10 presents a summary of the capacity factors used in the water cost of service analysis for each customer class. The estimated 2012 maximum hour capacity factors for the wholesale customer classes were set to be equivalent to their estimated maximum day capacity factors. This was done to reflect the fact that wholesale customers may have finished storage capacity which can be used to minimize the maximum hour demands they impose on the City's water utility system.

3.6 Calculation of the Estimated Water Utility 2012 Units of Service

After estimating the 2012 maximum hour capacity factors for each customer class, the next step in the cost of service process was to forecast the number of 2012 demand units for each base extra capacity cost component. Table 3-11 presents the calculation of the forecast 2012 water utility units of service. The equivalent number of meters and services shown in Column 9 of Table 3-11 were estimated using AWWA standard meter flow rate equivalencies, as adjusted to set 5/8", 3/4" and 1" meters to an equivalency of 1.0. The equivalent number of private fire connections shown in Column 11 of Table 3-11 were estimated using AWWA standard meter flow rate equivalencies with 6" fire protection connections assigned an equivalency of 1.0. All public fire hydrants are assumed to be a 6" connection.

The maximum day and maximum hour extra capacity demand for private fire connections and public fire hydrants, as shown in Table 3-11 was based on an assumption of a maximum day fire flow of 3.36 million gallons and a maximum hour fire flow of 20.16 million gallons. These amounts were then allocated to inside and outside city private fire connections and public fire hydrants based on their respective number of 6" equivalent connections.

Table 3-10
Summary of the Estimated 2012 Water Utility Customer Class Maximum Day and Maximum Hour Capacity Factors

Rate	Type	Customer Description	Maximum Hour Capacity Factor	Maximum Hour Capacity Factor
RSWI	RWTR	Residential Water Inside City - Domestic	1.86	3.34
RSWI	RLWN	Residential Water Inside City - Lawn	3.42	6.30
COWI	CWTR	Commercial Water Inside City - Domestic	1.61	2.91
COWI	CWNA	Commercial Water Inside City - No Sewer	1.77	3.21
COWI	CLWN	Commercial Water Inside City - Lawn	3.51	6.42
RVCI	RVCT	Special Contract Inside City	3.37	6.12
RSWO	RWTR	Residential Water Outside City - Domestic	1.85	3.37
ARWA	RWTR	Andover Residential Water - Domestic	1.73	3.16
RSWO	RLWN	Residential Water Outside City - Lawn	3.55	6.52
ARWA	RLWN	Andover Residential Water - Lawn	3.91	6.92
COWO	CWTR	Commercial Water Outside City - Domestic	1.62	2.96
COWO	CWNA	Commercial Water Outside City - No Sewer	2.87	5.21
COWO	CLWN	Commercial Water Outside City - Lawn	4.00	7.47
ACWA	CWTR	Andover Commercial Water - Domestic	1.57	2.89
ACWA	CLWN	Andover Commercial Water - Lawn	2.85	5.23
RVCO	RVCT	Special Contract Outside City	4.93	8.99
NPWW	WHOW	Non-Potable Wholesale Water	1.76	1.76
UWVR	WHOW	Uniform Wholesale Volume	2.00	2.00
WHOW	WHOW	Wholesale Water	1.95	1.95

Customer Class	Base Units		Maximum Day Extra Capacity Units			Maximum Hour Extra Capacity Units			Customer Units		Direct Fire Units		
	Annual Demand Units (1)	Average Day Demand Units 2 = (1/365)	Maximum Day Capacity Factor (3)	Maximum Day Total Capacity Units 4 = (2 X 3)	Maximum Day Extra Capacity Units 5 = (4 - 2)	Maximum Hour Capacity Factor (6)	Maximum Hour Total Capacity Units 7 = (2 x 6)	Maximum Hour Extra Capacity Units 8 = (7 - 4)	Water Equiv. Meters & Services (9)	Water Bills (10)	Private Fire Equip, Connect (11)	Private Fire . Bills (12)	Public Fire Hydrants (13)
Residential Water Inside City - Domestic	8,895,998,636	24,372,599	1.86	45,214,799	20,842,200	3.34	81,519,361	36,304,562	122,711	1,471,260			
Residential Water Inside City - Lawn	2,180,666	5,974	3.42	20,462	14,488	6.30	37,646	17,184	83	996			
Commercial Water Inside City - Domestic	5,135,790,988	14,070,660	1.61	22,611,281	8,540,620	2.91	40,911,370	18,300,089	18,122	133,320			
Commercial Water Inside City - No Sewer	221,902,344	607,952	1.77	1,075,417	467,466	3.21	1,951,853	876,435	14	120			
Commercial Water Inside City - Lawn	164,108,534	449,612	3.51	1,576,516	1,126,904	6.42	2,884,979	1,308,463	4,370	32,196			
Special Contract Inside City	298,968,545	819,092	3.37	2,764,406	1,945,314	6.12	5,013,028	2,248,622	560	4,308			
Inside City Private Fire Connections	----	----	----	26,274	26,274	----	157,646	131,371	----	----	93	20,340	
Inside City Public Fire Hydrants	----	----	----	<u>3,113,361</u>	<u>3,113,361</u>	----	<u>18,680,165</u>	<u>15,566,804</u>	----	----	----	----	<u>11,020</u>
Total Inside City	14,718,949,714	40,325,890	1.89	76,402,517	36,076,627	4.19	151,156,048	74,753,532	145,860	1,642,200	93	20,340	11,020
Residential Water Outside City - Domestic	241,389,229	661,340	1.85	1,221,230	559,890	3.37	2,228,299	1,007,069	2,953	35,412			
Andover Residential Water - Domestic	289,281,391	792,552	1.73	1,369,631	577,079	3.16	2,502,456	1,132,825	3,196	38,328			
Residential Water Outside City - Lawn	929,299	2,546	3.55	9,032	6,486	6.52	16,609	7,577	24	288			
Andover Residential Water - Lawn	143,975	394	3.91	1,540	1,146	6.92	2,728	1,188	10	120			
Commercial Wtr. Outside City - Domestic	948,080,183	2,597,480	1.62	4,201,115	1,603,635	2.96	7,685,554	3,484,439	225	1,788			
Commercial Wtr. Outside City - No Sewer	149,641,500	409,977	2.87	1,178,125	768,148	5.21	2,137,326	959,201	6	48			
Commercial Water Outside City - Lawn	1,693,411	4,639	4.00	18,550	13,911	7.47	34,653	16,103	142	1,104			
Andover Commercial Water - Domestic	109,269,956	299,370	1.57	470,577	171,207	2.89	864,905	394,328	392	2,904			
Andover Commercial Water - Lawn	4,967,807	13,610	2.85	38,730	25,120	5.23	71,143	32,413	184	1,428			
Special Contract Outside City	9,466,143	25,935	4.93	127,977	102,043	8.99	233,088	105,110	32	276			
Outside City Private Fire Connections	----	----	----	565	565	----	3,390	2,825	----	----	2	792	
Outside City Public Fire Hydrants	----	----	----	<u>219,800</u>	<u>219,800</u>	----	<u>1,318,799</u>	<u>1,098,999</u>	----	----	----	----	<u>778</u>
Total Outside City	1,754,862,893	4,807,844	1.84	8,856,873	4,049,029	4.22	17,098,950	8,242,077	7,164	81,696	2	792	778
Non-Potable Wholesale Water	10,387,313	28,458	1.76	50,094	21,636	1.76	50,094	0	3	12			
Uniform Wholesale Volume	865,735,125	2,371,877	2.00	4,745,072	2,373,195	2.00	4,745,072	0	28	24			
Wholesale Water	<u>555,109,125</u>	<u>1,520,847</u>	<u>1.95</u>	<u>2,964,198</u>	<u>1,443,351</u>	<u>1.95</u>	<u>2,964,198</u>	<u>0</u>	<u>162</u>	<u>84</u>	----	----	----
Total Wholesale	1,431,231,563	3,921,182	1.98	7,759,364	3,838,181	2.02	7,759,364	0	193	120	0	0	0
Total Water Utility	17,905,044,170	49,054,916		93,018,753	43,963,837		176,014,362	82,995,609	153,217	1,724,016	95	21,132	11,798

3.7 Calculation of the Forecast 2012 Water Utility Unit Costs of Service

The next step in the process of forecasting the 2012 water utility revenue requirement for each customer class is to calculate the unit cost of service for each base extra capacity cost component. This process allocates the O&M, depreciation expense, and return on invested capital components of the 2012 revenue requirement between inside city and outside city customers. To allocate the return on invested capital component of the revenue requirement, RFC estimated that outside city customers should pay a 6.88% rate of return on the capital invested by inside city customers to construct outside city rate base assets. This contrasts with the 7.50% outside city rate of return used in the COSA that was completed in 2008. The derivation of the 6.88% outside city rate of return is shown below in Table 3-12.

Table 3-12 Estimation of the 2012 Water and Sewer Utility Outside City Rate of Return				
Combined Water and Sewer Utility Capital Structure Components	Amount	% of Total	Cost of Capital (Notes 1 & 2)	Weighted Avg. Cost of Capital
Equity Portion = Total Net Assets	\$609,589,485	56.34%	8.07%	4.55%
Debt Portion = Current Portion of LTD + Outstanding Revenue Bonds	<u>\$472,485,195</u>	<u>43.66%</u>	5.35%	<u>2.34%</u>
Total Theoretical Capital Structure	\$1,082,074,680	100.00%		6.8823%
Note 1: The 5.35% "Cost of Debt" input based on the 2010B Series Water and Sewer Revenue Bonds which feature interest rates between 3.00% and 5.35%.				
Note 2: The 8.07% "Cost of Equity" input based on the 5/31/11 Bond Buyer Index return on revenue bonds of 5.38% multiplied by a factor of 1.5				

Table 3-13 shows the calculation of the forecast 2012 inside and outside city unit cost of service. As shown in Table 3-13, the use of a 6.88% outside city rate of return results in outside city customers providing \$5.92 million of the \$18.93 million return on invested capital revenue requirement. The remaining \$13.01 million is provided by inside city customers which equates to a 2.60% return on inside city rate base. The overall blended water utility total system return on invested capital is 3.22%.

3.8 Forecast 2012 Water Utility Revenue Requirement by Customer Class

Once the 2012 inside and outside city unit cost of service has been estimated, the 2012 water utility revenue requirement for each customer class can be forecast. This process is shown in Table 3-14 and is accomplished by multiplying the unit costs of service derived in Table 3-13, by the unique units of service for each customer class. The revenue requirement for each customer class is based on their unique class-specific consumption characteristics and reflects the amount of revenue that must be recovered through the utility rates paid by the customers in each class. By determining a revenue requirement for each customer class in this manner, the maximum possible rate equity can be achieved between customer classes.

Table 3-15 summarizes the forecast revenue requirement for each customer class. Because the City does not charge fire departments for public fire hydrant service, the revenue requirement for this service is assigned to the meters and services component of the water service revenue requirement. As a result, the revenue requirement for public fire hydrant service is recovered from customers via the monthly fixed charge portion of rates. As shown in Table 3-15, the overall 2012 percentage increase in water rate revenues is 4.0%. This corresponds to the overall rate revenue increase specified in the water utility financial plan (Table 2-15). Table 3-16 summarizes the forecast revenue requirement for each customer class after the allocation of public fire protection costs to each class. Table 3-17 shows this information by customer type (residential, commercial, special contract, wholesale).

Table 3-13 Calculation of the Forecast 2012 Water Utility Unit Costs of Service												
Metric	Total	Common to All Customers (Retail and Wholesale)					Retail Customers Only					
		Base Demand	Max Day Extra Capacity Demand	Max Hour Extra Capacity Demand	Equivalent Meters & Services	Bills	Base Demand	Max Day Extra Capacity Demand	Max Hour Extra Capacity Demand	Equivalent Private Fire Protection Connections	Bills	Public Fire Hydrants
Units of Service												
Inside City Units of Service		14,718,949,714	32,936,992	59,055,356	145,860	1,642,200	14,718,949,714	36,076,627	74,753,532	93	20,340	11,020
Outside City - Retail Units of Service		1,754,862,893	3,828,664	7,140,252	7,164	81,696	1,754,862,893	4,049,029	8,242,077	2	792	778
Outside City - Wholesale Units of Service		<u>1,431,231,563</u>	<u>3,838,181</u>	<u>0</u>	<u>193</u>	<u>120</u>						
Total Outside City Units of Service		3,186,094,456	7,666,846	7,140,252	7,357	81,816	1,754,862,893	4,049,029	8,242,077	2	792	778
Total Water Utility Units of Service		17,905,044,170	40,603,837	66,195,609	153,217	1,724,016	16,473,812,607	40,125,656	82,995,609	95	21,132	11,798
Cost of Service Components												
Return on Invested Capital Revenue Req.												
Total Water Utility - Unit Cost												
Total Water Utility Net Fixed Assets	\$587,047,455	\$232,234,781	\$104,531,241	\$21,384,128	\$7,431,485	\$0	\$60,266,187	\$46,241,903	\$108,949,907	\$0	\$0	\$6,007,825
Total Water Utility Units		<u>17,905,044,170</u>	<u>40,603,837</u>	<u>66,195,609</u>	<u>153,217</u>	<u>1,724,016</u>	<u>16,473,812,607</u>	<u>40,125,656</u>	<u>82,995,609</u>	<u>95</u>	<u>21,132</u>	<u>11,798</u>
Total Water Utility Unit Cost - \$ per Unit		\$0.012970	\$2.574418	\$0.323045	\$48.503003	\$0.000000	\$0.003658	\$1.152427	\$1.312719	\$0.000000	\$0.000000	\$509.224001
Inside City - Return on Net Fixed Assets												
Inside City Units of Service		14,718,949,714	32,936,992	59,055,356	145,860	1,642,200	14,718,949,714	36,076,627	74,753,532	93	20,340	11,020
Net Fixed Asset Unit Cost - \$/Unit		<u>\$0.012970</u>	<u>\$2.574418</u>	<u>\$0.323045</u>	<u>\$48.503003</u>	<u>\$0.000000</u>	<u>\$0.003658</u>	<u>\$1.152427</u>	<u>\$1.312719</u>	<u>\$0.000000</u>	<u>\$0.000000</u>	<u>\$509.224001</u>
Inside City Net Fixed Assets	\$501,019,822	\$190,910,005	\$84,793,577	\$19,077,509	\$7,074,648	\$0	\$53,846,368	\$41,575,691	\$98,130,376	\$0	\$0	\$5,611,648
Inside City % ROR on Fixed Assets	2.60%											
Inside City \$ Return on Fixed Assets	\$13,009,430	<u>\$4,957,150</u>	<u>\$2,201,741</u>	<u>\$495,365</u>	<u>\$183,700</u>	<u>\$0</u>	<u>\$1,398,169</u>	<u>\$1,079,550</u>	<u>\$2,548,043</u>	<u>\$0</u>	<u>\$0</u>	<u>\$145,711</u>
Inside City Unit Cost - \$ per Unit	2.60%	\$0.000337	\$0.066847	\$0.008388	\$1.259424	\$0.000000	\$0.000095	\$0.029924	\$0.034086	\$0.000000	\$0.000000	\$13.222459
Outside City - Return on Net Fixed Assets												
Outside City Units of Service		3,186,094,456	7,666,846	7,140,252	7,357	81,816	1,754,862,893	4,049,029	8,242,077	2	792	778
Net Fixed Asset Unit Cost - \$/Unit		<u>\$0.012970</u>	<u>\$2.574418</u>	<u>\$0.323045</u>	<u>\$48.503003</u>	<u>\$0.000000</u>	<u>\$0.003658</u>	<u>\$1.152427</u>	<u>\$1.312719</u>	<u>\$0.000000</u>	<u>\$0.000000</u>	<u>\$509.224001</u>
Outside City Net Fixed Assets	\$86,027,634	\$41,324,777	\$19,737,664	\$2,306,619	\$356,837	\$0	\$6,419,819	\$4,666,212	\$10,819,530	\$0	\$0	\$396,176
Outside City, \$/Unit ROR on Net Fixed Assets	6.88%											
Outside City Return on Net Fixed Assets	\$5,920,696	<u>\$2,844,103</u>	<u>\$1,358,409</u>	<u>\$158,749</u>	<u>\$24,559</u>	<u>\$0</u>	<u>\$441,832</u>	<u>\$321,144</u>	<u>\$744,635</u>	<u>\$0</u>	<u>\$0</u>	<u>\$27,266</u>
Outside City Unit Cost - \$ per Unit	6.88%	\$0.000893	\$0.177180	\$0.022233	\$3.338131	\$0.000000	\$0.000252	\$0.079314	\$0.090346	\$0.000000	\$0.000000	\$35.046419
Total Water Utility Return on Net Fixed Assets	\$18,930,126	\$7,801,253	\$3,560,150	\$654,114	\$208,258	\$0	\$1,840,002	\$1,400,694	\$3,292,678	\$0	\$0	\$172,978
Total Water Utility ROR on Net Fixed Assets	3.22%											

Table 3-13 - Continued Calculation of the Forecast 2012 Water Utility Unit Costs of Service												
Metric	Total	Common to All Customers (Retail and Wholesale)					Retail Customers Only					
		Base Demand	Max Day Extra Capacity Demand	Max Hour Extra Capacity Demand	Equivalent Meters & Services	Bills	Base Demand	Max Day Extra Capacity Demand	Max Hour Extra Capacity Demand	Equivalent Private Fire Protection Connections	Bills	Public Fire Hydrants
O&M Expense Revenue Requirement												
Total Water Utility O&M Expense	\$38,217,322	\$9,179,902	\$7,154,237	\$1,586,794	\$5,736,619	\$3,971,980	\$2,798,167	\$2,147,018	\$5,058,559	\$26,790	\$48,243	\$509,012
Total Water Utility Units		<u>17,905,044,170</u>	<u>40,603,837</u>	<u>66,195,609</u>	<u>153,217</u>	<u>1,724,016</u>	<u>16,473,812,607</u>	<u>40,125,656</u>	<u>82,995,609</u>	<u>95</u>	<u>21,132</u>	<u>11,798</u>
Total Water Utility Unit Cost - \$/Unit		\$0.000513	\$0.176196	\$0.023971	\$37.441139	\$2.303911	\$0.000170	\$0.053507	\$0.060950	\$282.001215	\$2.282920	\$43.143939
Inside City Units		14,718,949,714	32,936,992	59,055,356	145,860	1,642,200	14,718,949,714	36,076,627	74,753,532	93	20,340	11,020
Inside City O&M Expense	\$33,544,817	<u>\$7,546,394</u>	<u>\$5,803,369</u>	<u>\$1,415,633</u>	<u>\$5,461,165</u>	<u>\$3,783,483</u>	<u>\$2,500,094</u>	<u>\$1,930,365</u>	<u>\$4,556,207</u>	<u>\$26,226</u>	<u>\$46,435</u>	<u>\$475,446</u>
Inside City Unit Cost - \$ per Unit		\$0.000513	\$0.176196	\$0.023971	\$37.441139	\$2.303911	\$0.000170	\$0.053507	\$0.060950	\$282.001215	\$2.282920	\$43.143939
Outside City Units		3,186,094,456	7,666,846	7,140,252	7,357	81,816	1,754,862,893	4,049,029	8,242,077	2	792	778
Outside City O&M Expense	\$4,672,505	<u>\$1,633,508</u>	<u>\$1,350,868</u>	<u>\$171,161</u>	<u>\$275,454</u>	<u>\$188,497</u>	<u>\$298,073</u>	<u>\$216,653</u>	<u>\$502,352</u>	<u>\$564</u>	<u>\$1,808</u>	<u>\$33,566</u>
Outside City Unit Cost - \$ per Unit		\$0.000513	\$0.176196	\$0.023971	\$37.441139	\$2.303911	\$0.000170	\$0.053507	\$0.060950	\$282.001215	\$2.282920	\$43.143939
Depreciation Expense Revenue Requirement												
Total Water Utility Depreciation Expense	\$12,071,003	\$3,749,529	\$2,597,237	\$226,755	\$683,632	\$0	\$1,299,053	\$996,756	\$2,348,444	\$0	\$0	\$169,595
Total Water Utility Units		<u>17,905,044,170</u>	<u>40,603,837</u>	<u>66,195,609</u>	<u>153,217</u>	<u>1,724,016</u>	<u>16,473,812,607</u>	<u>40,125,656</u>	<u>82,995,609</u>	<u>95</u>	<u>21,132</u>	<u>11,798</u>
Total Water Utility Unit Cost - \$/Unit		\$0.000209	\$0.063965	\$0.003426	\$4.461856	\$0.000000	\$0.000079	\$0.024841	\$0.028296	\$0.000000	\$0.000000	\$14.374929
Inside City Units		14,718,949,714	32,936,992	59,055,356	145,860	1,642,200	14,718,949,714	36,076,627	74,753,532	93	20,340	11,020
Inside City Depreciation Expense	\$10,372,736	<u>\$3,082,323</u>	<u>\$2,106,825</u>	<u>\$202,296</u>	<u>\$650,806</u>	<u>\$0</u>	<u>\$1,160,673</u>	<u>\$896,175</u>	<u>\$2,115,226</u>	<u>\$0</u>	<u>\$0</u>	<u>\$158,412</u>
Inside City Unit Cost - \$ per Unit		\$0.000209	\$0.063965	\$0.003426	\$4.461856	\$0.000000	\$0.000079	\$0.024841	\$0.028296	\$0.000000	\$0.000000	\$14.374929
Outside City Units		3,186,094,456	7,666,846	7,140,252	7,357	81,816	1,754,862,893	4,049,029	8,242,077	2	792	778
Outside City Depreciation Expense	\$1,698,267	<u>\$667,206</u>	<u>\$490,412</u>	<u>\$24,459</u>	<u>\$32,826</u>	<u>\$0</u>	<u>\$138,381</u>	<u>\$100,581</u>	<u>\$233,218</u>	<u>\$0</u>	<u>\$0</u>	<u>\$11,184</u>
Outside City Unit Cost - \$ per Unit		\$0.000209	\$0.063965	\$0.003426	\$4.461856	\$0.000000	\$0.000079	\$0.024841	\$0.028296	\$0.000000	\$0.000000	\$14.374929
Total Water Utility Revenue Requirement	\$69,218,451	\$20,730,684	\$13,311,625	\$2,467,663	\$6,628,509	\$3,971,980	\$5,937,223	\$4,544,468	\$10,699,681	\$26,790	\$48,243	\$851,585

Table 3-14 Detailed Calculation of the Forecast 2012 Water Utility Revenue Requirement by Customer Class												
Customer Class	Total Revenue Req.	Common to All Customers (Retail and Wholesale)					Retail Customers Only					
		Base Demand	Max Day Extra Capacity Demand	Max Hour Extra Capacity Demand	Equivalent Meters & Services	Bills	Base Demand	Max Day Extra Capacity Demand	Max Hour Extra Capacity Demand	Equivalent Private Fire Protection Connections	Bills	Public Fire Hydrants
Total Water Utility Unit Cost of Service												
Inside City Cost of Service - \$/Unit	----	\$0.001059	\$0.307008	\$0.035785	\$43.162419	\$2.303911	\$0.000344	\$0.108272	\$0.123332	\$282.001215	\$2.282920	\$70.741327
Outside City Cost of Service - \$/Unit	----	\$0.001615	\$0.417341	\$0.049630	\$45.241126	\$2.303911	\$0.000500	\$0.157662	\$0.179591	\$282.001215	\$2.282920	\$92.565288
Customer Class Revenue Requirement Calculation												
Residential Water Inside City - Domestic												
Units of Service	-----	8,895,998,636	20,842,200	36,304,562	122,711	1,471,260	8,895,998,636	20,842,200	36,304,562	0	0	0
Revenue Req. (Units of Service X \$/Unit)	\$35,595,705	\$9,419,955	\$6,398,732	\$1,299,158	\$5,296,504	\$3,389,653	\$3,057,575	\$2,256,628	\$4,477,502	\$0	\$0	\$0
Residential Water Inside City - Lawn												
Units of Service	-----	2,180,666	14,488	17,184	83	996	2,180,666	14,488	17,184	0	0	0
Revenue Req. (Units of Service X \$/Unit)	\$17,686	\$2,309	\$4,448	\$615	\$3,582	\$2,295	\$749	\$1,569	\$2,119	\$0	\$0	\$0
Commercial Water Inside City - Domestic												
Units of Service	-----	5,135,790,988	8,540,620	18,300,089	18,122	133,320	5,135,790,988	8,540,620	18,300,089	0	0	9
Revenue Req. (Units of Service X \$/Unit)	\$14,751,410	\$5,438,279	\$2,622,043	\$654,868	\$782,189	\$307,157	\$1,765,183	\$924,710	\$2,256,980	\$0	\$0	\$0
Commercial Water Inside City - No Sewer												
Units of Service	-----	221,902,344	467,466	876,435	14	120	221,902,344	467,466	876,435	0	0	0
Revenue Req. (Units of Service X \$/Unit)	\$645,706	\$234,972	\$143,516	\$31,363	\$604	\$276	\$76,268	\$50,613	\$108,092	\$0	\$0	\$0
Commercial Water Inside City - Lawn												
Units of Service	-----	164,108,534	1,126,904	1,308,463	4,370	32,196	164,108,534	1,126,904	1,308,463	0	0	0
Revenue Req. (Units of Service X \$/Unit)	\$1,169,155	\$173,774	\$345,969	\$46,823	\$188,620	\$74,177	\$56,404	\$122,012	\$161,375	\$0	\$0	\$0
Special Contract Inside City												
Units of Service	-----	298,968,545	1,945,314	2,248,622	560	4,308	298,968,545	1,945,314	2,248,622	0	0	0
Revenue Req. (Units of Service X \$/Unit)	\$1,619,074	\$316,577	\$597,228	\$80,467	\$24,171	\$9,925	\$102,756	\$210,623	\$277,326	\$0	\$0	\$0
Inside City Private Fire Connections												
Units of Service	-----	0	0	0	0	0	0	26,274	131,371	93	20,340	0
Revenue Req. (Units of Service X \$/Unit)	\$91,708	\$0	\$0	\$0	\$0	\$0	\$0	\$2,845	\$16,202	\$26,226	\$46,435	\$0
Inside City Public Fire Connections												
Units of Service	-----	0	0	0	0	0	0	3,113,361	15,566,804	0	0	11,020
Revenue Req. (Units of Service X \$/Unit)	\$3,036,539	\$0	\$0	\$0	\$0	\$0	\$0	\$337,090	\$1,919,880	\$0	\$0	\$779,569
Total Inside City												
Units of Service	-----	14,718,949,714	32,936,992	59,055,356	145,860	1,642,200	14,718,949,714	36,076,627	74,753,532	93	20,340	11,020
Revenue Req. (Units of Service X \$/Unit)	\$56,926,983	\$15,585,867	\$10,111,935	\$2,113,294	\$6,295,670	\$3,783,483	\$5,058,936	\$3,906,090	\$9,219,476	\$26,226	\$46,435	\$779,569
Residential Water Outside City - Domestic												
Units of Service	-----	241,389,229	559,890	1,007,069	2,953	35,412	241,389,229	559,890	1,007,069	0	0	0
Revenue Req. (Units of Service X \$/Unit)	\$1,278,564	\$389,789	\$233,665	\$49,981	\$133,597	\$81,586	\$120,812	\$88,273	\$180,861	\$0	\$0	\$0
Andover Residential Water - Domestic												
Units of Service	-----	289,281,391	577,079	1,132,825	3,196	38,328	289,281,391	577,079	1,132,825	0	0	0
Revenue Req. (Units of Service X \$/Unit)	\$1,436,290	\$467,124	\$240,839	\$56,222	\$144,591	\$88,304	\$144,782	\$90,983	\$203,445	\$0	\$0	\$0
Residential Water Outside City - Lawn												
Units of Service	-----	929,299	6,486	7,577	24	288	929,299	6,486	7,577	0	0	0
Revenue Req. (Units of Service X \$/Unit)	\$9,181	\$1,501	\$2,707	\$376	\$1,086	\$664	\$465	\$1,023	\$1,361	\$0	\$0	\$0
Andover Residential Water - Lawn												
Units of Service	-----	143,975	1,146	1,188	10	120	143,975	1,146	1,188	0	0	0
Revenue Req. (Units of Service X \$/Unit)	\$1,965	\$232	\$478	\$59	\$452	\$276	\$72	\$181	\$213	\$0	\$0	\$0
Commercial Water Outside City - Domestic												
Units of Service	-----	948,080,183	1,603,635	3,484,439	225	1,788	948,080,183	1,603,635	3,484,439	0	0	0
Revenue Req. (Units of Service X \$/Unit)	\$3,740,536	\$1,530,934	\$669,263	\$172,932	\$10,179	\$4,119	\$474,502	\$252,832	\$625,775	\$0	\$0	\$0
Commercial Water Outside City - No Sewer												
Units of Service	-----	149,641,500	768,148	959,201	6	48	149,641,500	768,148	959,201	0	0	0
Revenue Req. (Units of Service X \$/Unit)	\$978,469	\$241,637	\$320,580	\$47,605	\$271	\$111	\$74,894	\$121,108	\$172,264	\$0	\$0	\$0
Commercial Water Outside City - Lawn												
Units of Service	-----	1,693,411	13,911	16,103	142	1,104	1,693,411	13,911	16,103	0	0	0
Revenue Req. (Units of Service X \$/Unit)	\$24,240	\$2,734	\$5,806	\$799	\$6,424	\$2,544	\$848	\$2,193	\$2,892	\$0	\$0	\$0

Table 3-14 - Continued Detailed Calculation of the Forecast 2012 Water Utility Revenue Requirement by Customer Class												
Customer Class	Total Revenue Req.	Common to All Customers (Retail and Wholesale)					Retail Customers Only					
		Base Demand	Max Day Extra Capacity Demand	Max Hour Extra Capacity Demand	Equivalent Meters & Services	Bills	Base Demand	Max Day Extra Capacity Demand	Max Hour Extra Capacity Demand	Equivalent Private Fire Protection Connections	Bills	Public Fire Hydrants
Andover Commercial Water - Domestic												
Units of Service	-----	109,269,956	171,207	394,328	392	2,904	109,269,956	171,207	394,328	0	0	0
Revenue Req. (Units of Service X \$/Unit)	\$444,392	\$176,446	\$71,452	\$19,570	\$17,735	\$6,691	\$54,688	\$26,993	\$70,818	\$0	\$0	\$0
Residential Water Outside City - Lawn												
Units of Service	-----	929,299	6,486	7,577	24	288	929,299	6,486	7,577	0	0	0
Revenue Req. (Units of Service X \$/Unit)	\$9,181	\$1,501	\$2,707	\$376	\$1,086	\$664	\$465	\$1,023	\$1,361	\$0	\$0	\$0
Andover Residential Water - Lawn												
Units of Service	-----	143,975	1,146	1,188	10	120	143,975	1,146	1,188	0	0	0
Revenue Req. (Units of Service X \$/Unit)	\$1,965	\$232	\$478	\$59	\$452	\$276	\$72	\$181	\$213	\$0	\$0	\$0
Commercial Water Outside City - Domestic												
Units of Service	-----	948,080,183	1,603,635	3,484,439	225	1,788	948,080,183	1,603,635	3,484,439	0	0	0
Revenue Req. (Units of Service X \$/Unit)	\$3,740,536	\$1,530,934	\$669,263	\$172,932	\$10,179	\$4,119	\$474,502	\$252,832	\$625,775	\$0	\$0	\$0
Commercial Water Outside City - No Sewer												
Units of Service	-----	149,641,500	768,148	959,201	6	48	149,641,500	768,148	959,201	0	0	0
Revenue Req. (Units of Service X \$/Unit)	\$978,469	\$241,637	\$320,580	\$47,605	\$271	\$111	\$74,894	\$121,108	\$172,264	\$0	\$0	\$0
Commercial Water Outside City - Lawn												
Units of Service	-----	1,693,411	13,911	16,103	142	1,104	1,693,411	13,911	16,103	0	0	0
Revenue Req. (Units of Service X \$/Unit)	\$24,240	\$2,734	\$5,806	\$799	\$6,424	\$2,544	\$848	\$2,193	\$2,892	\$0	\$0	\$0
Andover Commercial Water - Domestic												
Units of Service	-----	109,269,956	171,207	394,328	392	2,904	109,269,956	171,207	394,328	0	0	0
Revenue Req. (Units of Service X \$/Unit)	\$444,392	\$176,446	\$71,452	\$19,570	\$17,735	\$6,691	\$54,688	\$26,993	\$70,818	\$0	\$0	\$0
Andover Commercial Water - Lawn												
Units of Service	-----	4,967,807	25,120	32,413	184	1,428	4,967,807	25,120	32,413	0	0	0
Revenue Req. (Units of Service X \$/Unit)	\$43,996	\$8,022	\$10,483	\$1,609	\$8,324	\$3,290	\$2,486	\$3,960	\$5,821	\$0	\$0	\$0
Special Contract Outside City												
Units of Service	-----	9,466,143	102,043	105,110	32	276	9,466,143	102,043	105,110	0	0	0
Revenue Req. (Units of Service X \$/Unit)	\$104,875	\$15,286	\$42,587	\$5,217	\$1,448	\$636	\$4,738	\$16,088	\$18,877	\$0	\$0	\$0
Outside City Private Fire Connections												
Units of Service	-----	0	0	0	0	0	0	565	2,825	2	792	0
Revenue Req. (Units of Service X \$/Unit)	\$2,969	\$0	\$0	\$0	\$0	\$0	\$0	\$89	\$507	\$564	\$1,808	\$0
Outside City Public Fire Connections												
Units of Service	-----	0	0	0	0	0	0	219,800	1,098,999	0	0	778
Revenue Req. (Units of Service X \$/Unit)	\$304,041	\$0	\$0	\$0	\$0	\$0	\$0	\$34,654	\$197,371	\$0	\$0	\$72,016
Total Outside City												
Units of Service	-----	1,754,862,893	3,828,664	7,140,252	7,164	81,696	1,754,862,893	4,049,029	8,242,077	2	792	778
Revenue Req. (Units of Service X \$/Unit)	\$8,369,516	\$2,833,704	\$1,597,859	\$354,369	\$324,107	\$188,220	\$878,286	\$638,378	\$1,480,205	\$564	\$1,808	\$72,016
Non-Potable Wholesale Water												
Units of Service	-----	10,387,313	21,636	0	3	12	0	0	0	0	0	0
Revenue Req. (Units of Service X \$/Unit)	\$25,966	\$16,773	\$9,030	\$0	\$136	\$28	\$0	\$0	\$0	\$0	\$0	\$0
Uniform Wholesale Volume												
Units of Service	-----	865,735,125	2,373,195	0	28	24	0	0	0	0	0	0
Revenue Req. (Units of Service X \$/Unit)	\$2,389,719	\$1,397,965	\$990,431	\$0	\$1,267	\$55	\$0	\$0	\$0	\$0	\$0	\$0
Wholesale Water												
Units of Service	-----	555,109,125	1,443,351	0	162	84	0	0	0	0	0	0
Revenue Req. (Units of Service X \$/Unit)	\$1,506,267	\$896,375	\$602,370	\$0	\$7,329	\$194	\$0	\$0	\$0	\$0	\$0	\$0
Total Wholesale												
Units of Service	-----	1,431,231,563	3,838,181	0	193	120	0	0	0	0	0	0
Revenue Req. (Units of Service X \$/Unit)	\$3,921,952	\$2,311,113	\$1,601,831	\$0	\$8,732	\$276	\$0	\$0	\$0	\$0	\$0	\$0
Total Water Utility												
Units of Service	-----	17,905,044,170	40,603,837	66,195,609	153,217	1,724,016	16,473,812,607	40,125,656	82,995,609	95	21,132	11,798
Revenue Req. (Units of Service X \$/Unit)	\$69,218,451	\$20,730,684	\$13,311,625	\$2,467,663	\$6,628,509	\$3,971,980	\$5,937,223	\$4,544,468	\$10,699,681	\$26,790	\$48,243	\$851,585

Customer Rate Class	2012 Water Service Revenue Requirement					2012 Private Fire Protection Revenue Requirement		2012 Total Revenue Requirement	2012 Revenue @ Existing 2011 Rates	2012 Dollar Change	2012 % Change
	Base Demand	Max Day Extra Capacity Demand	Max Hour Extra Capacity Demand	Meters & Services Equivalent Connections	Billing & Collection	Private Fire Equivalent Connections	Billing & Collection				
Inside City											
Residential Water Inside City - Domestic	12,477,530	8,655,360	\$5,776,659	5,296,504	3,389,653			35,595,705	38,753,120	(3,157,415)	-8.15%
Residential Water Inside City - Lawn	3,059	6,016	2,734	3,582	2,295			17,686	23,518	(5,831)	-24.80%
Commercial Water Inside City - Domestic	7,203,462	3,546,753	2,911,848	782,189	307,157			14,751,410	14,096,647	654,764	4.64%
Commercial Water Inside City - No Sewer	311,240	194,129	139,455	604	276			645,706	386,620	259,086	67.01%
Commercial Water Inside City - Lawn	<u>230,179</u>	<u>467,981</u>	<u>208,198</u>	<u>188,620</u>	<u>74,177</u>			<u>1,169,155</u>	<u>1,496,686</u>	<u>(327,531)</u>	<u>-21.88%</u>
Total Inside City Retail	\$20,225,470	\$12,870,240	\$9,038,895	\$6,271,500	\$3,773,558			\$52,179,662	\$54,756,590	(\$2,576,928)	-4.71%
Special Contract Inside City	\$419,333	\$807,851	\$357,793	\$24,171	\$9,925			\$1,619,074	\$869,857	\$749,217	86.13%
Inside City Private Fire Protection Connections	0	0	0	0	0	45,273	46,435	91,708	78,001	13,707	17.57%
Inside City Public Fire Protection Connections	<u>0</u>	<u>0</u>	<u>0</u>	<u>3,036,539</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>3,036,539</u>	<u>0</u>	<u>3,036,539</u>	<u>N/A</u>
Total Inside City Fire Protection	\$0	\$0	\$0	\$3,036,539	\$0	\$45,273	\$46,435	\$3,128,247	\$78,001	\$3,050,246	3910.52%
Total Inside City	\$20,644,803	\$13,678,091	\$9,396,688	\$9,332,209	\$3,783,483	\$45,273	\$46,435	\$56,926,983	\$55,704,448	\$1,222,535	2.19%
Outside City											
Residential Water Outside City - Domestic	510,601	321,938	230,841	133,597	81,586			1,278,564	1,712,607	(434,043)	-25.34%
Andover Residential Water - Domestic	611,905	331,822	259,667	144,591	88,304			1,436,290	1,934,603	(498,314)	-25.76%
Residential Water Outside City - Lawn	1,966	3,729	1,737	1,086	664			9,181	13,403	(4,222)	-31.50%
Andover Residential Water - Lawn	305	659	272	452	276			1,965	3,319	(1,354)	-40.80%
Commercial Water Outside City - Domestic	2,005,436	922,095	798,707	10,179	4,119			3,740,536	3,249,819	490,717	15.10%
Commercial Water Outside City - No Sewer	316,531	441,687	219,869	271	111			978,469	509,147	469,322	92.18%
Commercial Water Outside City - Lawn	3,582	7,999	3,691	6,424	2,544			24,240	33,411	(9,171)	-27.45%
Andover Commercial Water - Domestic	231,134	98,445	90,388	17,735	6,691			444,392	501,289	(56,897)	-11.35%
Andover Commercial Water - Lawn	<u>10,508</u>	<u>14,444</u>	<u>7,430</u>	<u>8,324</u>	<u>3,290</u>			<u>43,996</u>	<u>75,853</u>	<u>(31,857)</u>	<u>-42.00%</u>
Total Outside City Retail	\$3,691,967	\$2,142,818	\$1,612,602	\$322,660	\$187,584			\$7,957,632	\$8,033,450	(75,818)	-0.94%
Special Contract Outside City	\$20,023	\$58,675	\$24,093	\$1,448	\$636			\$104,875	\$46,665	\$58,211	124.74%
Outside City Private Fire Protection Connections	0	0	0	0	0	1,160	\$1,808	2,969	4,754	(1,785)	-37.55%
Outside City Public Fire Protection Connections	<u>0</u>	<u>0</u>	<u>0</u>	<u>304,041</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>304,041</u>	<u>0</u>	<u>304,041</u>	<u>N/A</u>
Total Outside City Fire Protection	\$0	\$0	\$0	\$304,041	\$0	\$1,160	\$1,808	\$307,009	\$4,754	\$302,255	6358.35%
Total Outside City	\$3,711,990	\$2,201,493	\$1,636,696	\$628,148	\$188,220	\$1,160	\$1,808	\$8,369,516	\$8,084,869	\$284,648	3.52%
Wholesale											
Non-Potable Wholesale Water	7,503	0	0	0	0			7,503	10,527	(3,024)	-28.72%
Uniform Wholesale Volume	1,403,613	995,933	0	1,349	72			2,400,968	1,740,895	660,073	37.92%
Wholesale Water	<u>899,996</u>	<u>605,897</u>	<u>0</u>	<u>7,382</u>	<u>204</u>			<u>1,513,480</u>	<u>1,015,464</u>	<u>498,017</u>	<u>49.04%</u>
Total Wholesale	\$2,311,113	\$1,601,831	\$0	\$8,732	\$276			\$3,921,952	\$2,766,886	\$1,155,066	41.75%
Total Water Utility	\$26,667,906	\$17,481,415	\$11,033,384	\$9,969,089	\$3,971,980	\$46,434	\$48,243	\$69,218,451	\$66,556,202	\$2,662,248	4.00%
			\$55,182,706		\$13,941,069		\$94,676				

Table 3-16 Summary of the Forecast Water Utility 2012 Revenue Requirement by Customer Class - After the Allocation of Public Fire Protection Costs											
Customer Rate Class	2012 Water Service Revenue Requirement					2012 Private Fire Protection Revenue Requirement		2012 Total Revenue Requirement	2012 Revenue @ Existing 2011 Rates	2012 Dollar Change	2012 % Change
	Base Demand	Max Day Extra Capacity Demand	Max Hour Extra Capacity Demand	Meters & Services Equivalent Connections	Billing & Collection	Private Fire Equivalent Connections	Billing & Collection				
Inside City											
Residential Water Inside City - Domestic	\$12,477,530	\$8,655,360	\$5,776,659	\$7,851,123	\$3,389,653			\$38,150,324	\$38,753,120	(\$602,796)	-1.56%
Residential Water Inside City - Lawn	\$3,059	\$6,016	\$2,734	\$5,310	\$2,295			\$19,414	\$23,518	(\$4,103)	-17.45%
Commercial Water Inside City - Domestic	\$7,203,462	\$3,546,753	\$2,911,848	\$1,159,456	\$307,157			\$15,128,677	\$14,096,647	\$1,032,030	7.32%
Commercial Water Inside City - No Sewer	\$311,240	\$194,129	\$139,455	\$896	\$276			\$645,997	\$386,620	\$259,377	67.09%
Commercial Water Inside City - Lawn	<u>\$230,179</u>	<u>\$467,981</u>	<u>\$208,198</u>	<u>\$279,595</u>	<u>\$74,177</u>			<u>\$1,260,130</u>	<u>\$1,496,686</u>	<u>(\$236,556)</u>	<u>-15.81%</u>
Total Inside City Retail	\$20,225,470	\$12,870,240	\$9,038,895	\$9,296,380	\$3,773,558			\$55,204,543	\$54,756,590	\$447,953	0.82%
Special Contract Inside City	\$419,333	\$807,851	\$357,793	\$35,829	\$9,925			\$1,630,732	\$869,857	\$760,875	87.47%
Inside City Private Fire Protection Connections	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$45,273</u>	<u>\$46,435</u>	<u>\$91,708</u>	<u>\$78,001</u>	<u>\$13,707</u>	<u>17.57%</u>
Total Inside City	\$20,644,803	\$13,678,091	\$9,396,688	\$9,332,209	\$3,783,483	\$45,273	\$46,435	\$56,926,983	\$55,704,448	\$1,222,535	2.19%
Outside City											
Residential Water Outside City - Domestic	\$510,601	\$321,938	\$230,841	\$255,635	\$81,586			\$1,400,602	\$1,712,607	(\$312,005)	-18.22%
Andover Residential Water - Domestic	\$611,905	\$331,822	\$259,667	\$276,671	\$88,304			\$1,568,370	\$1,934,603	(\$366,233)	-18.93%
Residential Water Outside City - Lawn	\$1,966	\$3,729	\$1,737	\$2,078	\$664			\$10,173	\$13,403	(\$3,230)	-24.10%
Andover Residential Water - Lawn	\$305	\$659	\$272	\$866	\$276			\$2,378	\$3,319	(\$941)	-28.34%
Commercial Water Outside City - Domestic	\$2,005,436	\$922,095	\$798,707	\$19,478	\$4,119			\$3,749,834	\$3,249,819	\$500,015	15.39%
Commercial Water Outside City - No Sewer	\$316,531	\$441,687	\$219,869	\$519	\$111			\$978,717	\$509,147	\$469,570	92.23%
Commercial Water Outside City - Lawn	\$3,582	\$7,999	\$3,691	\$12,293	\$2,544			\$30,108	\$33,411	(\$3,303)	-9.89%
Andover Commercial Water - Domestic	\$231,134	\$98,445	\$90,388	\$33,935	\$6,691			\$460,592	\$501,289	(\$40,697)	-8.12%
Andover Commercial Water - Lawn	<u>\$10,508</u>	<u>\$14,444</u>	<u>\$7,430</u>	<u>\$15,928</u>	<u>\$3,290</u>			<u>\$51,600</u>	<u>\$75,853</u>	<u>(\$24,253)</u>	<u>-31.97%</u>
Total Outside City Retail	\$3,691,967	\$2,142,818	\$1,612,602	\$617,402	\$187,584			\$8,252,374	\$8,033,450	\$218,924	2.73%
Special Contract Outside City	\$20,023	\$58,675	\$24,093	\$2,770	\$636			\$106,198	\$46,665	\$59,533	127.58%
Outside City Private Fire Protection Connections	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$1,160</u>	<u>\$1,808</u>	<u>\$2,969</u>	<u>\$4,754</u>	<u>(\$1,785)</u>	<u>-37.55%</u>
Total Outside City	\$3,711,990	\$2,201,493	\$1,636,696	\$620,172	\$188,220	\$1,160	\$1,808	\$8,361,540	\$8,084,869	\$276,672	3.42%
Wholesale											
Non-Potable Wholesale Water	\$7,503	\$0	\$0	\$124	\$0			\$7,627	\$10,527	(\$2,900)	-27.55%
Uniform Wholesale Volume	\$1,403,613	\$995,933	\$0	\$2,507	\$72			\$2,402,125	\$1,740,895	\$661,230	37.98%
Wholesale Water	<u>\$899,996</u>	<u>\$605,897</u>	<u>\$0</u>	<u>\$14,077</u>	<u>\$204</u>			<u>\$1,520,175</u>	<u>\$1,015,464</u>	<u>\$504,712</u>	<u>49.70%</u>
Total Wholesale	\$2,311,113	\$1,601,831	\$0	\$16,708	\$276			\$3,929,928	\$2,766,886	\$1,163,042	42.03%
Total Water Utility	\$26,667,906	\$17,481,415	\$11,033,384	\$9,969,089	\$3,971,980	\$46,434	\$48,243	\$69,218,451	\$66,556,202	\$2,662,248	4.00%
			\$55,182,706		\$13,941,069		\$94,676				

Customer Type	2012 Water Service Revenue Requirement					2012 Private Fire Protection Revenue Requirement		2012 Total Revenue Requirement (Costs)	2012 Revenue @ Existing 2011 Rates	2012 Dollar Change	2012 % Change
	Base Demand	Max Day Extra Capacity Demand	Max Hour Extra Capacity Demand	Meters & Services Equivalent Connections	Billing & Collection	Private Fire Equivalent Connections	Billing & Collection				
Residential											
Residential Water Inside City - Domestic	\$12,477,530	\$8,655,360	\$5,776,659	\$7,851,123	\$3,389,653			\$38,150,324	\$38,753,120	(\$602,796)	-1.56%
Residential Water Inside City - Lawn	\$3,059	\$6,016	\$2,734	\$5,310	\$2,295			\$19,414	\$23,518	(\$4,103)	-17.45%
Residential Water Outside City - Domestic	\$510,601	\$321,938	\$230,841	\$255,635	\$81,586			\$1,400,602	\$1,712,607	(\$312,005)	-18.22%
Andover Residential Water - Domestic	\$611,905	\$331,822	\$259,667	\$276,671	\$88,304			\$1,568,370	\$1,934,603	(\$366,233)	-18.93%
Residential Water Outside City - Lawn	\$1,966	\$3,729	\$1,737	\$2,078	\$664			\$10,173	\$13,403	(\$3,230)	-24.10%
Andover Residential Water - Lawn	<u>\$305</u>	<u>\$659</u>	<u>\$272</u>	<u>\$866</u>	<u>\$276</u>			<u>\$2,378</u>	<u>\$3,319</u>	<u>(\$941)</u>	<u>-28.34%</u>
Total Residential (Inside & Outside City)	\$13,605,365	\$9,319,525	\$6,271,911	\$8,391,682	\$3,562,778			\$41,151,261	\$42,440,569	(\$1,289,308)	-3.04%
Commercial											
Commercial Water Inside City - Domestic	\$7,203,462	\$3,546,753	\$2,911,848	\$1,159,456	\$307,157			\$15,128,677	\$14,096,647	\$1,032,030	7.32%
Commercial Water Inside City - No Sewer	\$311,240	\$194,129	\$139,455	\$896	\$276			\$645,997	\$386,620	\$259,377	67.09%
Commercial Water Inside City - Lawn	\$230,179	\$467,981	\$208,198	\$279,595	\$74,177			\$1,260,130	\$1,496,686	(\$236,556)	-15.81%
Commercial Water Outside City - Domestic	\$2,005,436	\$922,095	\$798,707	\$19,478	\$4,119			\$3,749,834	\$3,249,819	\$500,015	15.39%
Commercial Water Outside City - No Sewer	\$316,531	\$441,687	\$219,869	\$519	\$111			\$978,717	\$509,147	\$469,570	92.23%
Commercial Water Outside City - Lawn	\$3,582	\$7,999	\$3,691	\$12,293	\$2,544			\$30,108	\$33,411	(\$3,303)	-9.89%
Andover Commercial Water - Domestic	\$231,134	\$98,445	\$90,388	\$33,935	\$6,691			\$460,592	\$501,289	(\$40,697)	-8.12%
Andover Commercial Water - Lawn	<u>\$10,508</u>	<u>\$14,444</u>	<u>\$7,430</u>	<u>\$15,928</u>	<u>\$3,290</u>			<u>\$51,600</u>	<u>\$75,853</u>	<u>(\$24,253)</u>	<u>-31.97%</u>
Total Commercial (Inside & Outside City)	\$10,312,071	\$5,693,533	\$4,379,587	\$1,522,100	\$398,365			\$22,305,656	\$20,349,472	\$1,956,185	9.61%
Special Contract											
Special Contract Inside City	\$419,333	\$807,851	\$357,793	\$35,829	\$9,925			\$1,630,732	\$869,857	\$760,875	87.47%
Special Contract Outside City	<u>\$20,023</u>	<u>\$58,675</u>	<u>\$24,093</u>	<u>\$2,770</u>	<u>\$636</u>			<u>\$106,198</u>	<u>\$46,665</u>	<u>\$59,533</u>	<u>127.58%</u>
Total Special Contract (Inside & Outside City)	\$439,357	\$866,526	\$381,887	\$38,599	\$10,561			\$1,736,930	\$916,522	\$820,408	89.51%
Wholesale											
Non-Potable Wholesale Water	\$7,503	\$0	\$0	\$0	\$124			\$7,627	\$10,527	(\$2,900)	-27.55%
Uniform Wholesale Volume	\$1,403,613	\$995,933	\$0	\$1,349	\$1,229			\$2,402,125	\$1,740,895	\$661,230	37.98%
Wholesale Water	<u>\$899,996</u>	<u>\$605,897</u>	<u>\$0</u>	<u>\$7,382</u>	<u>\$6,899</u>			<u>\$1,520,175</u>	<u>\$1,015,464</u>	<u>\$504,712</u>	<u>49.70%</u>
Total Wholesale	\$2,311,113	\$1,601,831	\$0	\$8,732	\$8,253			\$3,929,928	\$2,766,886	\$1,163,042	42.03%
Fire Protection											
Inside City Private Fire Protection Connections	\$0	\$0	\$0	\$0	\$0	\$45,273	\$46,435	\$91,708	\$78,001	\$13,707	17.57%
Outside City Private Fire Protection Connections	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$1,160</u>	<u>\$1,808</u>	<u>\$2,969</u>	<u>\$4,754</u>	<u>(\$1,785)</u>	<u>-37.55%</u>
Total Fire Protection	\$0	\$0	\$0	\$0	\$0	\$46,434	\$48,243	\$94,676	\$82,755	\$11,922	14.41%
Total Water Utility	\$26,667,906	\$17,481,415	\$11,033,384	\$9,961,113	\$3,979,956	\$46,434	\$48,243	\$69,218,451	\$66,556,202	\$2,662,248	4.00%
			\$55,182,706		\$13,941,069		\$94,676				

Section 4: Water Utility Rate Design

4.1 Volumetric Rate Design - Readiness-to-Serve Adjustment

In addition to full revenue requirement recovery, water rate structures must be designed to achieve objectives such as mitigating revenue volatility, promoting water conservation, and minimizing excessive customer bill impacts. As a result, the decision regarding what percentage of the total revenue requirement should be recovered through volumetric rates versus fixed charges is often driven by a variety of financial management, long-range planning, and public policy considerations.

Based on our consultations with City staff, RFC did not modify any existing water utility customer classes or the consumption block thresholds used for retail and wholesale water rates. However, after receiving the approval of City staff, RFC did utilize a “readiness-to-serve” adjustment in proposed 2012 and forecast 2013 - 2016 water rates.

Conceptually, a readiness-to-serve represents the cost a utility incurs to maintain adequate capacity to meet any potential customer demand. A readiness-to-serve adjustment shifts a larger percentage of total revenue requirement recovery to fixed charges. As a result, the use of a readiness-to-serve adjustment helps to mitigate water rate revenue volatility caused by wetter and cooler than normal climatic conditions during the summer irrigation season.

As shown in Table 3-15, the total of the 2012 base demand, maximum day extra capacity demand and maximum hour extra capacity demand revenue requirement components was \$55.18 million. Through the use of a readiness-to-serve adjustment, \$6.56 million of this amount was shifted to the fixed charge portion of revenue requirement recovery leaving only \$48.63 million to be recovered through volumetric rates. Table 4-1 shows how the readiness-to-serve adjustment impacts the revenue requirement forecast recovered through volumetric rates during 2012.

Table 4-1 Impact of the Readiness-to-Serve (RTS) Adjustment on the Volumetric Revenue Requirement for Water Utility Rate Classes													
Customer Class	Forecast 2012 Consumption by Block (Gallons)				Forecast 2012 Volumetric Revenue Requirement Before the Readiness-to-Serve Adjustment				2012 RTS Adjustment	Forecast 2012 Volumetric Revenue Requirement After Readiness-to-Serve Adjustment			
	Block 1	Block 2	Block 3	Total	Base	Max Day	Max Hour	Total		Base	Max Day	Max Hour	Total
Residential Water Inside City - Domestic	6,899,539,126	1,476,197,789	520,261,722	8,895,998,636	\$12,477,530	\$8,655,360	\$5,776,659	\$26,909,549	(\$5,651,438)	\$9,857,048	\$6,837,595	\$4,563,468	\$21,258,111
Residential Water Inside City - Lawn	549,085	671,187	960,394	2,180,666	\$3,059	\$6,016	\$2,734	11,809	(\$3,829)	\$2,067	\$4,065	\$1,848	\$7,980
Commercial Water Inside City - Domestic	4,063,566,152	742,695,826	329,529,010	5,135,790,988	\$7,203,462	\$3,546,753	\$2,911,848	13,662,063	(163,736)	\$7,117,130	\$3,504,246	\$2,876,951	\$13,498,328
Commercial Water Inside City - No Sewer	204,891,736	16,998,143	12,465	221,902,344	\$311,240	\$194,129	\$139,455	644,825	(\$240)	\$311,124	\$194,057	\$139,404	\$644,585
Commercial Water Inside City - Lawn	<u>22,694,747</u>	<u>25,092,740</u>	<u>116,321,047</u>	<u>164,108,534</u>	<u>\$230,179</u>	<u>\$467,981</u>	<u>\$208,198</u>	<u>906,358</u>	<u>(\$39,843)</u>	<u>\$220,060</u>	<u>\$447,409</u>	<u>\$199,046</u>	<u>\$866,515</u>
Total Inside City Retail	11,191,240,845	2,261,655,685	967,084,639	14,419,981,169	\$20,225,470	\$12,870,240	\$9,038,895	\$42,134,605	(\$5,859,086)	\$17,507,430	\$10,987,373	\$7,780,716	\$36,275,519
Special Contract Inside City	298,968,545	0	0	298,968,545	\$419,333	\$807,851	\$357,793	\$1,584,977	(\$6,621)	\$417,582	\$804,476	\$356,298	\$1,578,356
Residential Water Outside City - Domestic	175,306,127	43,982,542	22,100,560	241,389,229	\$510,601	\$321,938	\$230,841	\$1,063,381	(\$313,539)	\$360,049	\$227,014	\$162,777	\$749,841
Andover Residential Water - Domestic	211,982,594	57,972,953	19,325,844	289,281,391	\$611,905	\$331,822	\$259,667	\$1,203,395	(\$339,369)	\$439,342	\$238,245	\$186,438	\$864,025
Residential Water Outside City - Lawn	257,936	266,085	405,278	929,299	\$1,966	\$3,729	\$1,737	\$7,432	(\$2,551)	\$1,291	\$2,449	\$1,141	\$4,881
Andover Residential Water - Lawn	49,288	46,120	48,568	143,975	\$305	\$659	\$272	\$1,236	(\$1,063)	\$43	\$92	\$38	\$173
Commercial Water Outside City - Domestic	789,643,616	150,943,363	7,493,205	948,080,183	\$2,005,436	\$922,095	\$798,707	\$3,726,237	(\$11,097)	\$1,999,463	\$919,349	\$796,328	\$3,715,140
Commercial Water Outside City - No Sewer	123,730,953	25,910,547	0	149,641,500	\$316,531	\$441,687	\$219,869	\$978,087	(\$283)	\$316,439	\$441,560	\$219,805	\$977,804
Commercial Water Outside City - Lawn	711,611	410,826	570,974	1,693,411	\$3,582	\$7,999	\$3,691	\$15,272	(\$6,641)	\$2,024	\$4,521	\$2,086	\$8,631
Andover Commercial Water - Domestic	84,442,867	16,230,621	8,596,467	109,269,956	\$231,134	\$98,445	\$90,388	\$419,967	(\$16,198)	\$222,220	\$94,648	\$86,902	\$403,769
Andover Commercial Water - Lawn	<u>1,006,721</u>	<u>1,153,674</u>	<u>2,807,413</u>	<u>4,967,807</u>	<u>\$10,508</u>	<u>\$14,444</u>	<u>\$7,430</u>	<u>\$32,382</u>	<u>(\$8,620)</u>	<u>\$7,711</u>	<u>\$10,599</u>	<u>\$5,452</u>	<u>\$23,762</u>
Total Outside City Retail	1,387,131,711	296,916,731	61,348,309	1,745,396,750	\$3,691,967	\$2,142,818	\$1,612,602	\$7,447,388	(\$699,361)	\$3,348,582	\$1,938,477	\$1,460,968	\$6,748,027
Special Contract Outside City	9,466,143	0	0	9,466,143	\$20,023	\$58,675	\$24,093	\$102,792	(\$1,875)	\$19,658	\$57,605	\$23,654	\$100,917
Non-Potable Wholesale Water	10,387,313	0	0	10,387,313	\$7,503	\$0	\$0	\$7,503	\$36	\$7,539	\$0	\$0	\$7,539
Uniform Wholesale Volume	865,735,125	0	0	865,735,125	\$1,403,613	\$995,933	\$0	\$2,399,547	\$1,576	\$1,404,535	\$996,587	\$0	\$2,401,122
Wholesale Water	<u>529,707,904</u>	<u>25,401,221</u>	<u>0</u>	<u>555,109,125</u>	<u>\$899,996</u>	<u>\$605,897</u>	<u>\$0</u>	<u>\$1,505,894</u>	<u>\$10,148</u>	<u>\$906,062</u>	<u>\$609,981</u>	<u>\$0</u>	<u>\$1,516,042</u>
Total Water Utility	14,292,637,586	2,583,973,637	1,028,432,947	17,905,044,170	\$26,667,906	\$17,481,415	\$11,033,384	\$55,182,706	(\$6,555,183)	\$23,611,388	\$15,394,498	\$9,621,636	\$48,627,523

4.2 Volumetric Rate Design - Cost Recovery in Each Consumption Block

As discussed previously, the City's existing water rate structure for inside city retail, outside city retail, and wholesale water customers features three consumption blocks. The monthly consumption threshold for Block 1 is defined as up to 110% of a customer's average winter consumption, the monthly consumption threshold for Block 2 is defined as being between 111% to 310% of a customer's average winter consumption, and the monthly consumption threshold for Block 3 is defined as being over 310% of a customer's average winter consumption.

After determining the total forecast 2012 revenue requirement to be recovered through volumetric rates as shown in Table 4-1, the question that must be addressed is: how much of the total volumetric revenue requirement should be recovered in consumption Blocks 1, 2 and 3, respectively? If more of the volumetric revenue requirement is recovered in Blocks 1 and 2, there is less potential for water rate revenue volatility during the summer irrigation season. For this reason, RFC elected to utilize the cost recovery methodology shown in Table 4-2 which results in 40% of the forecast maximum hour extra capacity costs being recovered in consumption Block 1.

Table 4-2 Recovery of Forecast 2012 Volumetric Revenue Requirement Components by Consumption Block				
Volumetric Revenue Requirement Component	% of Recovery in Consumption Block 1	% of Recovery in Consumption Block 2	% of Recovery in Consumption Block 3	Total % Recovery
Base Demand Costs	100%	0%	0%	100%
Maximum Day Extra Capacity Costs	40%	60%	0%	100%
Maximum Hour Extra Capacity Costs	0%	70%	30%	100%

4.3 Volumetric Rate Design - Inside City vs. Outside City Rate Differential

Existing 2011 volumetric water rates for outside city customers are 60% higher than inside city rates. After consultation with City staff, RFC elected to retain this existing differential for the proposed 2012, and forecast 2013 - 2016, volumetric water rates.

4.4 Volumetric Rate Design - Multi-Year Phase-In to Full Cost Rates for Selected Customer Rate Classes

Based on the results of the cost of service study, four of the City's existing customer rate classes would experience percentage increases in excess of 35% if they were required to pay full cost volumetric water rates in 2012. These customer classes are Special Contract (inside and outside city), Wholesale Water - Uniform Volume, and Wholesale Water. As a result, full cost volumetric water rates for Special Contract customers were designed to be phased-in over a five-year period. Full cost volumetric water rates for Wholesale Water - Uniform Volume, and Wholesale Water customers were designed to be phased-in over a four-year period. The 2012 volumetric revenue shortfall from not immediately implementing full cost rates for these customer classes was approximately \$896K or roughly 1.8% of the 2012 volumetric revenue requirement of \$48.63 million.

4.5 Proposed 2012 Volumetric Rates

Table 4-3 shows existing, proposed, and forecast volumetric water rates for the period 2011 - 2016.

Table 4-3 2011 - 2016 Existing, Proposed and Forecast Volumetric Water Rates											
Customer Class	\$ Rate per Thousand Gallons						Annual Percentage Increases				
	Existing 2011	Proposed 2012	Forecast				Proposed 2012	Forecast			
			2013	2014	2015	2016		2013	2014	2015	2016
Inside City Retail											
Block 1	\$1.43	\$1.52	\$1.63	\$1.81	\$2.01	\$2.22	6.29%	7.24%	11.04%	11.05%	10.45%
Block 2	\$5.42	\$5.49	\$5.87	\$6.38	\$6.97	\$7.85	1.29%	6.92%	8.69%	9.25%	12.63%
Block 3	\$8.15	\$8.29	\$8.56	\$9.32	\$10.19	\$11.46	1.72%	3.26%	8.88%	9.33%	12.46%
Inside City Special Contract	\$2.74	\$3.25	\$3.83	\$4.56	\$5.45	\$6.50	18.61%	17.85%	19.06%	19.52%	19.27%
Outside City Retail											
Block 1	\$2.29	\$2.44	\$2.61	\$2.90	\$3.22	\$3.56	6.55%	6.97%	11.11%	11.03%	10.56%
Block 2	\$8.68	\$8.79	\$9.40	\$10.21	\$11.16	\$12.56	1.27%	6.94%	8.62%	9.30%	12.54%
Block 3	\$13.05	\$13.27	\$13.70	\$14.92	\$16.29	\$18.34	1.69%	3.24%	8.91%	9.18%	1.69%
Outside City Special Contract	\$4.39	\$5.20	\$6.13	\$7.30	\$8.72	\$10.40	18.45%	17.88%	19.09%	19.45%	19.27%
Non-Potable Wholesale	\$0.99	\$0.99	\$0.99	\$0.99	\$0.99	\$0.99	0.00%	0.00%	0.00%	0.00%	0.00%
Uniform Wholesale	\$2.01	\$2.27	\$2.60	\$3.00	\$3.39	\$3.76	12.94%	14.54%	15.38%	13.00%	10.91%
Wholesale Water											
Block 1	\$1.53	\$1.75	\$1.97	\$2.27	\$2.54	\$2.81	14.38%	12.57%	15.23%	11.89%	10.63%
Block 2	\$7.94	\$9.09	\$10.24	\$11.80	\$13.21	\$14.62	14.48%	12.65%	15.23%	11.95%	10.67%
Block 3	\$11.87	\$13.59	\$15.31	\$17.65	\$19.76	\$21.87	14.49%	12.66%	15.28%	11.95%	10.68%

4.6 Monthly Fixed Charge Rate Design - Readiness to Serve Adjustment

The first step in developing monthly fixed charges is to calculate the monthly capacity and billing and collection components of the fixed charge. Table 4-4 presents this calculation for 2012, based on the fixed charge revenue requirement of \$13.94 million calculated before the implementation of the readiness to serve adjustment described in Section 4.1. The equivalent meters shown in Table 4-4, are based on AWWA meter flow rate equivalencies, as adjusted to set all 5/8", 3/4" and 1" meters to an equivalency of 1.0.

Table 4-4 Capacity and Billing & Collection Components of the 2012 Water Monthly Fixed Charge Before the Implementation of a Readiness to Serve Adjustment							
Class	2012 Revenue Requirement	2012 Units of Service	Units	2012 Annual Fixed Charge	2012 Monthly Fixed Charge	2011 Monthly Fixed Charge	% Change
Inside City Meters & Services	\$9,332,209	145,860	Equivalent Meters	\$63.98	\$5.33		
Billing & Collection	<u>\$3,783,483</u>	1,642,200	Annual Bills	\$2.30	<u>\$2.30</u>		
Total	\$13,115,693				\$7.64	\$11.18	-32%
Outside City Meters & Services	\$636,879	7,357	Equivalent Meters	\$86.57	\$7.21		
Billing & Collection	<u>\$188,497</u>	81,816	Annual Bills	\$2.30	<u>\$2.30</u>		
Total	\$825,376				\$9.52	\$17.89	-47%
Total	\$13,941,069	153,217	Equivalent Meters				
		1,724,016	Annual Bills				

Based on the information shown in Table 4-4, a monthly fixed charge pricing schedule can be developed. The City's existing 2011 water monthly fixed charges are not based on AWWA flow rate equivalencies and, as a result, there is only a \$39.45 differential between the 2011 monthly fixed charge for a customer with a 5/8" meter and a customer with a 12" meter. This existing differential is not appropriate because it does not reflect the significant difference in the potential demands that can be imposed by customers with larger meters.

Table 4-5 shows the monthly fixed charge pricing resulting from the use of the adjusted-AWWA meter flow rate equivalencies recommended by RFC before the implementation of the readiness-to-serve adjustment discussed in Section 4.1. As shown in Table 4-5, the result of these assumptions is that customers with 5/8", 3/4" and 1" meters would experience a decline of over 30% in their monthly fixed charges. In contrast, customers with 2" or larger meters would experience a percentage increase in their monthly fixed charges ranging from approximately 53% to over 887%.

Table 4-5 2012 Water Monthly Fixed Charges Before the Implementation of a Readiness-to-Serve Adjustment							
Meter Size	Billing Component	Adjusted AWWA Flow Rate Equivalencies	Capacity Component	Calculated 2012 Monthly Fixed Charge	Existing 2011 Monthly Fixed Charge	% Increase	\$ Increase
Inside City - Fixed Charge							
5/8"	\$2.30	1.00	\$5.33	\$7.64	\$11.18	-31.66%	(\$3.54)
3/4"	\$2.30	1.00	\$5.33	\$7.64	\$11.25	-32.09%	(\$3.61)
1"	\$2.30	1.00	\$5.33	\$7.64	\$11.49	-33.51%	(\$3.85)
1-1/2"	\$2.30	2.00	\$10.66	\$12.97	\$11.82	9.73%	\$1.15
2"	\$2.30	3.20	\$17.06	\$19.37	\$12.68	52.76%	\$6.69
3"	\$2.30	7.00	\$37.32	\$39.63	\$19.23	106.08%	\$20.40
4"	\$2.30	12.00	\$63.98	\$66.29	\$21.66	206.05%	\$44.63
6"	\$2.30	25.00	\$133.29	\$135.60	\$27.30	396.70%	\$108.30
8"	\$2.30	36.00	\$191.94	\$194.25	\$33.75	475.56%	\$160.50
10"	\$2.30	58.00	\$309.24	\$311.55	\$37.80	724.21%	\$273.75
12"	\$2.30	86.00	\$458.53	\$460.84	\$46.67	887.44%	\$414.17
16"	\$2.30	166.67	\$888.62	\$890.93	----	----	----
Outside City - Fixed Charge							
5/8"	----	----	----	\$12.23	\$17.89	-31.64%	(\$5.66)
3/4"	----	----	----	\$12.23	\$17.99	-32.02%	(\$5.76)
1"	----	----	----	\$12.23	\$18.38	-33.46%	(\$6.15)
1-1/2"	----	----	----	\$20.76	\$18.90	9.84%	\$1.86
2"	----	----	----	\$31.00	\$20.29	52.78%	\$10.71
3"	----	----	----	\$63.41	\$30.77	106.08%	\$32.64
4"	----	----	----	\$106.07	\$34.65	206.12%	\$71.42
6"	----	----	----	\$216.96	\$43.68	396.70%	\$173.28
8"	----	----	----	\$310.80	\$54.00	475.56%	\$256.80
10"	----	----	----	\$498.48	\$60.47	724.34%	\$438.01
12"	----	----	----	\$737.35	\$74.68	887.35%	\$662.67
16"	----	----	----	\$1,204.64	\$196.54	512.92%	\$1,008.10

4.7 Proposed 2012 Monthly Fixed Charges

After reviewing Table 4-5 with City staff, RFC developed an alternative 2012 rate design for water monthly fixed charges that features:

1. The use of the readiness-to-serve adjustment discussed in Table 4.1. This adjustment shifted \$6.56 million of the forecast 2012 volumetric revenue requirement to the fixed charge revenue requirement and was accomplished by raising the monthly fixed charges for 3/4" and 5/8" meters to \$11.49 per month which is equal to the existing 2011 fixed charge for 1" meters. Since the vast majority of meters on the water utility system are 5/8" and 3/4" in size, this results in excess fixed charge revenue recovery which can be used to offset the volumetric revenue requirement.
2. Instead of immediately moving to the use of adjusted-AWWA meter flow rate equivalencies in 2012, RFC developed a monthly fixed charge rate design based on a ten-year phase-in

to these equivalencies. This phase-in mitigates the large bill impacts that will be experienced by customers with large meter sizes.

- Continued use of the existing 2011 pricing differential of 60% between inside and outside city monthly fixed charges.

Table 4-6 shows the calculation of proposed 2012 water monthly fixed charges based on features #1 - #3 above.

Meter Size	Billing Component	Phase-In Flow Rate Equivalencies	Capacity Component	Proposed 2012 Monthly Fixed Charge	Existing 2011 Monthly Fixed Charge	% Increase	\$ Increase
Inside City - Fixed Charge							
5/8"	\$2.30	1.00	\$9.18	\$11.49	\$11.18	2.77%	\$0.31
3/4"	\$2.30	1.00	\$9.18	\$11.49	\$11.25	2.13%	\$0.24
1"	\$2.30	1.00	\$9.18	\$11.49	\$11.49	0.00%	\$0.00
1-1/2"	\$2.30	1.12	\$10.31	\$12.61	\$11.82	6.68%	\$0.79
2"	\$2.30	1.27	\$11.68	\$13.98	\$12.68	10.25%	\$1.30
3"	\$2.30	2.13	\$19.53	\$21.83	\$19.23	13.52%	\$2.60
4"	\$2.30	2.54	\$23.29	\$25.59	\$21.66	18.14%	\$3.93
6"	\$2.30	3.44	\$31.56	\$33.86	\$27.30	24.03%	\$6.56
8"	\$2.30	4.37	\$40.16	\$42.46	\$33.75	25.81%	\$8.71
10"	\$2.30	5.12	\$47.00	\$49.30	\$37.80	30.42%	\$11.50
12"	\$2.30	6.50	\$59.68	\$61.98	\$46.67	32.80%	\$15.31
Outside City - Fixed Charge							
5/8"	----	----	----	\$18.39	\$17.89	2.79%	\$0.50
3/4"	----	----	----	\$18.39	\$17.99	2.22%	\$0.40
1"	----	----	----	\$18.39	\$18.38	0.05%	\$0.01
1-1/2"	----	----	----	\$20.18	\$18.90	6.77%	\$1.28
2"	----	----	----	\$22.37	\$20.29	10.25%	\$2.08
3"	----	----	----	\$34.93	\$30.77	13.52%	\$4.16
4"	----	----	----	\$40.95	\$34.65	18.18%	\$6.30
6"	----	----	----	\$54.18	\$43.68	24.04%	\$10.50
8"	----	----	----	\$67.94	\$54.00	25.81%	\$13.94
10"	----	----	----	\$78.88	\$60.47	30.44%	\$18.41
12"	----	----	----	\$99.17	\$74.68	32.79%	\$24.49
16"	----	----	----	\$252.65	\$196.54	28.55%	\$56.11

Table 4-7 shows existing, proposed, and forecast water monthly fixed charges for the period 2011 - 2016.

Table 4-7
2011 - 2016 Existing, Proposed and Forecast Water Monthly Fixed Charges

Meter Size	\$ Monthly Charge per Bill						Annual Percentage Increases				
	Existing 2011	Proposed 2012	Forecast				Proposed 2012	Forecast			
			2013	2014	2015	2016		2013	2014	2015	2016
Inside City											
5/8"	\$11.18	\$11.49	\$11.62	\$11.83	\$12.06	\$12.30	2.77%	1.13%	1.81%	2.77%	1.13%
3/4"	\$11.25	\$11.49	\$11.61	\$11.82	\$12.05	\$12.29	2.13%	1.08%	1.81%	2.13%	1.08%
1"	\$11.49	\$11.49	\$11.61	\$11.82	\$12.05	\$12.29	0.00%	1.08%	1.81%	0.00%	1.08%
1-1/2"	\$11.82	\$12.61	\$13.45	\$14.34	\$15.29	\$16.30	6.68%	6.66%	6.62%	6.68%	6.66%
2"	\$12.68	\$13.98	\$15.41	\$16.99	\$18.73	\$20.65	10.25%	10.23%	10.25%	10.25%	10.23%
3"	\$19.23	\$21.83	\$24.78	\$28.13	\$31.93	\$36.25	13.52%	13.51%	13.52%	13.52%	13.51%
4"	\$21.66	\$25.59	\$30.23	\$35.71	\$42.18	\$49.82	18.14%	18.13%	18.13%	18.14%	18.13%
6"	\$27.30	\$33.86	\$41.99	\$52.07	\$64.57	\$80.07	24.03%	24.01%	24.01%	24.03%	24.01%
8"	\$33.75	\$42.46	\$53.42	\$67.21	\$84.56	\$106.38	25.81%	25.81%	25.81%	25.81%	25.81%
10"	\$37.80	\$49.30	\$64.29	\$83.84	\$109.33	\$142.57	30.42%	30.41%	30.41%	30.42%	30.41%
12"	\$46.67	\$61.98	\$82.31	\$109.31	\$145.17	\$192.79	32.80%	32.80%	32.80%	32.80%	32.80%
Outside City											
5/8"	\$17.89	\$18.39	\$18.60	\$18.93	\$19.30	\$19.68	2.79%	1.14%	1.77%	2.79%	1.14%
3/4"	\$17.99	\$18.39	\$18.59	\$18.92	\$19.29	\$19.68	2.22%	1.09%	1.78%	2.22%	1.09%
1"	\$18.38	\$18.39	\$18.59	\$18.92	\$19.29	\$19.68	0.05%	1.09%	1.78%	0.05%	1.09%
1-1/2"	\$18.90	\$20.18	\$21.52	\$22.95	\$24.47	\$26.08	6.77%	6.64%	6.64%	6.77%	6.64%
2"	\$20.29	\$22.37	\$24.66	\$27.19	\$29.97	\$33.04	10.25%	10.24%	10.26%	10.25%	10.24%
3"	\$30.77	\$34.93	\$39.65	\$45.01	\$51.09	\$58.00	13.52%	13.51%	13.52%	13.52%	13.51%
4"	\$34.65	\$40.95	\$48.37	\$57.14	\$67.49	\$79.72	18.18%	18.12%	18.13%	18.18%	18.12%
6"	\$43.68	\$54.18	\$67.19	\$83.32	\$103.32	\$128.12	24.04%	24.01%	24.01%	24.04%	24.01%
8"	\$54.00	\$67.94	\$85.48	\$107.54	\$135.30	\$170.21	25.81%	25.82%	25.81%	25.81%	25.82%
10"	\$60.47	\$78.88	\$102.87	\$134.15	\$174.93	\$228.12	30.44%	30.41%	30.41%	30.44%	30.41%
12"	\$74.68	\$99.17	\$131.70	\$174.90	\$232.28	\$308.47	32.79%	32.80%	32.80%	32.79%	32.80%
16"	\$196.54	\$252.65	\$324.79	\$417.52	\$536.72	\$689.96	28.55%	28.55%	28.55%	28.55%	28.55%

4.8 Proposed 2012 Monthly Private Fire Connection Charges

The methodology to calculate proposed 2012 private fire connection charges is generally the same as discussed for water monthly fixed charges with the exception that 6" diameter private fire connections are considered to have a flow equivalency of 1.0. Table 4-8 shows existing, proposed, and forecast monthly private fire connection charges for the period 2011 - 2016.

Table 4-8 2011 - 2016 Existing, Proposed and Forecast Water Private Fire Connection Charges						
Meter Size	Existing 2011	Proposed 2012	Forecast 2013	Forecast 2014	Forecast 2015	Forecast 2016
Inside City						
5/8"	\$3.43	\$3.43	\$3.55	\$3.75	\$3.97	\$4.20
3/4"	\$3.47	\$3.51	\$3.65	\$3.86	\$4.09	\$4.33
1"	\$3.60	\$3.79	\$3.99	\$4.27	\$4.57	\$4.90
1-1/2"	\$3.85	\$4.27	\$4.61	\$5.04	\$5.51	\$6.04
2"	\$4.44	\$5.01	\$5.48	\$6.08	\$6.73	\$7.47
3"	\$8.77	\$9.65	\$10.51	\$11.52	\$12.62	\$13.84
4"	\$10.39	\$11.85	\$13.31	\$15.04	\$16.99	\$19.21
6"	\$14.15	\$16.76	\$19.55	\$22.90	\$26.85	\$31.50
8"	\$18.43	\$21.97	\$25.87	\$30.58	\$36.16	\$42.80
10"	\$21.10	\$26.06	\$31.77	\$38.87	\$47.61	\$58.37
12"	\$27.01	\$33.82	\$41.89	\$52.04	\$64.71	\$80.54
Outside City						
5/8"	\$5.48	\$5.49	\$5.68	\$6.00	\$6.36	\$6.72
3/4"	\$5.54	\$5.62	\$5.84	\$6.18	\$6.55	\$6.93
1"	\$5.76	\$6.07	\$6.39	\$6.84	\$7.32	\$7.84
1-1/2"	\$6.16	\$6.84	\$7.38	\$8.07	\$8.82	\$9.67
2"	\$7.12	\$8.02	\$8.77	\$9.73	\$10.77	\$11.96
3"	\$14.04	\$15.44	\$16.82	\$18.44	\$20.20	\$22.15
4"	\$16.62	\$18.96	\$21.30	\$24.07	\$27.19	\$30.74
6"	\$22.65	\$26.82	\$31.28	\$36.64	\$42.96	\$50.40
8"	\$29.49	\$35.16	\$41.40	\$48.93	\$57.86	\$68.48
10"	\$33.76	\$41.70	\$50.84	\$62.20	\$76.18	\$93.40
12"	\$43.22	\$54.12	\$67.03	\$83.27	\$103.54	\$128.87

Section 5: Water Utility Customer Bill Impacts

Table 5-1 shows the estimated bill impacts of the proposed 2012 water rates for an inside city residential customer with 1" water meter.

Table 5-1 Estimated 2012 Water Bill Impacts for a Residential Customer with a 1" Meter					
Actual Monthly Consumption	Winter Average Consumption	2011 Total Monthly Water Bill	2012 Total Monthly Water Bill	2012 \$ Increase	2012 % Increase
1,000	1,000	\$12.92	\$13.01	\$0.09	0.70%
1,500	1,500	\$13.64	\$13.77	\$0.14	0.99%
2,000	2,000	\$14.35	\$14.53	\$0.18	1.25%
2,500	2,500	\$15.07	\$15.29	\$0.22	1.49%
3,000	3,000	\$15.78	\$16.05	\$0.27	1.71%
3,500	3,500	\$16.50	\$16.81	\$0.32	1.91%
4,000	4,000	\$17.21	\$17.57	\$0.36	2.09%
4,500	4,500	\$17.93	\$18.33	\$0.40	2.26%
5,000	5,000	\$18.64	\$19.09	\$0.45	2.41%
5,500	5,500	\$19.36	\$19.85	\$0.50	2.56%
6,000	6,000	\$20.07	\$20.61	\$0.54	2.69%
6,500	6,000	\$20.79	\$21.37	\$0.59	2.81%
7,000	6,000	\$23.10	\$23.72	\$0.62	2.69%
7,500	6,000	\$25.81	\$26.46	\$0.66	2.55%
8,000	6,000	\$28.52	\$29.21	\$0.69	2.43%
8,500	6,000	\$31.23	\$31.95	\$0.73	2.33%
9,000	6,000	\$33.94	\$34.70	\$0.76	2.25%
9,500	6,000	\$36.65	\$37.44	\$0.80	2.17%
10,000	6,000	\$39.36	\$40.19	\$0.83	2.11%
10,500	6,000	\$42.07	\$42.93	\$0.87	2.06%
11,000	6,000	\$44.78	\$45.68	\$0.90	2.01%
11,500	6,000	\$47.49	\$48.42	\$0.94	1.97%
12,000	6,000	\$50.20	\$51.17	\$0.97	1.94%
12,500	6,000	\$52.91	\$53.91	\$1.01	1.90%
13,000	6,000	\$55.62	\$56.66	\$1.04	1.87%
13,500	6,000	\$58.33	\$59.40	\$1.08	1.85%
14,000	6,000	\$61.04	\$62.15	\$1.11	1.82%
14,500	6,000	\$63.75	\$64.89	\$1.15	1.80%
15,000	6,000	\$66.46	\$67.64	\$1.18	1.78%
15,500	6,000	\$69.17	\$70.38	\$1.22	1.76%
16,000	6,000	\$71.88	\$73.13	\$1.25	1.74%
16,500	6,000	\$74.59	\$75.87	\$1.29	1.73%
17,000	6,000	\$77.30	\$78.62	\$1.32	1.71%
17,500	6,000	\$80.01	\$81.36	\$1.36	1.70%
18,000	6,000	\$82.72	\$84.11	\$1.39	1.68%
18,500	6,000	\$85.43	\$86.85	\$1.43	1.67%
19,000	6,000	\$89.23	\$90.72	\$1.49	1.67%
19,500	6,000	\$93.30	\$94.86	\$1.56	1.67%
22,500	6,000	\$117.75	\$119.73	\$1.98	1.68%

Table 5-2 shows the estimated bill impacts of the proposed 2012 water rates for an inside city commercial customer with a 2" meter.

Table 5-2 Estimated 2012 Water Bill Impacts for a Commercial Customer with a 2" Meter					
Actual Monthly Consumption	Winter Average Consumption	2011 Total Monthly Water Bill	2012 Total Monthly Water Bill	2012 \$ Increase	2012 % Increase
100,000	100,000	\$155.68	\$165.98	\$10.30	6.62%
500,000	500,000	\$727.68	\$773.98	\$46.30	6.36%
1,000,000	1,000,000	\$1,442.68	\$1,533.98	\$91.30	6.33%
1,500,000	1,500,000	\$2,157.68	\$2,293.98	\$136.30	6.32%
2,000,000	2,000,000	\$2,872.68	\$3,053.98	\$181.30	6.31%
2,500,000	2,500,000	\$3,587.68	\$3,813.98	\$226.30	6.31%
3,000,000	3,000,000	\$4,302.68	\$4,573.98	\$271.30	6.31%
3,500,000	3,500,000	\$5,017.68	\$5,333.98	\$316.30	6.30%
4,000,000	4,000,000	\$5,732.68	\$6,093.98	\$361.30	6.30%
4,500,000	4,500,000	\$6,447.68	\$6,853.98	\$406.30	6.30%
5,000,000	5,000,000	\$7,162.68	\$7,613.98	\$451.30	6.30%
5,500,000	5,500,000	\$7,877.68	\$8,373.98	\$496.30	6.30%
6,000,000	6,000,000	\$8,592.68	\$9,133.98	\$541.30	6.30%
6,500,000	6,500,000	\$9,307.68	\$9,893.98	\$586.30	6.30%
7,000,000	7,000,000	\$10,022.68	\$10,653.98	\$631.30	6.30%
7,500,000	7,500,000	\$10,737.68	\$11,413.98	\$676.30	6.30%
8,000,000	8,000,000	\$11,452.68	\$12,173.98	\$721.30	6.30%
8,500,000	8,500,000	\$12,167.68	\$12,933.98	\$766.30	6.30%
9,000,000	9,000,000	\$12,882.68	\$13,693.98	\$811.30	6.30%
9,500,000	9,500,000	\$13,597.68	\$14,453.98	\$856.30	6.30%
10,000,000	10,000,000	\$14,312.68	\$15,213.98	\$901.30	6.30%
10,500,000	10,500,000	\$15,027.68	\$15,973.98	\$946.30	6.30%
11,000,000	11,000,000	\$15,742.68	\$16,733.98	\$991.30	6.30%
11,500,000	11,500,000	\$16,457.68	\$17,493.98	\$1,036.30	6.30%
12,000,000	12,000,000	\$17,172.68	\$18,253.98	\$1,081.30	6.30%
12,500,000	12,500,000	\$17,887.68	\$19,013.98	\$1,126.30	6.30%
13,000,000	13,000,000	\$18,602.68	\$19,773.98	\$1,171.30	6.30%
13,500,000	13,500,000	\$19,317.68	\$20,533.98	\$1,216.30	6.30%
14,000,000	14,000,000	\$20,032.68	\$21,293.98	\$1,261.30	6.30%
14,500,000	14,500,000	\$20,747.68	\$22,053.98	\$1,306.30	6.30%
15,000,000	15,000,000	\$21,462.68	\$22,813.98	\$1,351.30	6.30%
15,500,000	15,500,000	\$22,177.68	\$23,573.98	\$1,396.30	6.30%
16,000,000	16,000,000	\$22,892.68	\$24,333.98	\$1,441.30	6.30%
16,500,000	16,500,000	\$23,607.68	\$25,093.98	\$1,486.30	6.30%
17,000,000	17,000,000	\$24,322.68	\$25,853.98	\$1,531.30	6.30%
17,500,000	17,500,000	\$25,037.68	\$26,613.98	\$1,576.30	6.30%
18,000,000	18,000,000	\$25,752.68	\$27,373.98	\$1,621.30	6.30%
18,500,000	18,500,000	\$26,467.68	\$28,133.98	\$1,666.30	6.30%
19,000,000	19,000,000	\$27,182.68	\$28,893.98	\$1,711.30	6.30%

Residential and commercial customer sewer bill impacts are provided in Section 10 of this report. Combined water and sewer bill impacts are provided in Section 11.

Section 6: Sewer Utility Description

6.1 Sewer Utility System

The sewer utility serves inside and outside city retail customers and one wholesale customer. The sewer collection system includes approximately 2,000 miles of sewers and 57 lift stations. The City operates four regional wastewater treatment plants, including the newly constructed Mid-Continent Water Reclamation Facility that has a daily treatment capacity of 10 MGD. Other wastewater treatment plants include the Lower Arkansas River Treatment Facility with a daily capacity of 54 MGD; the Four Mile Creek Wastewater Treatment Facility with a daily capacity of 3 MGD; and the Cowskin Creek Water Reclamation Facility with a daily capacity of 2 MGD. The total volume of wastewater treated in 2009 and 2010 was 13.5 billion gallons and 13.2 billion gallons, respectively.

6.2 Operational and Financial Management Structure

The operating divisions within the Public Works & Utilities Department that are directly responsible for the provision of sewer utility service are Sewer Administration, Sewage Treatment, and Sewer Maintenance. The City accounts for the operations of its sewer utility through the Sewer Utility Fund (Fund 530). The Controller's Office of the City's Department of Finance maintains separate accounts to manage sewer utility restricted cash reserves. They include the Sewer Utility Principal and Interest Account, the Sewer Utility Bond Reserve Account, and a separate Sewer Improvement Subaccount.

The City funds sewer CIP expenditures through the Sewer Improvement Subaccount which receives the proceeds from debt issues as well as operating surpluses transferred from the Sewer Utility Fund. The City issues revenue bond debt to fund water and sewer utility capital improvements on a combined utility basis. As a result, compliance with the revenue bond debt service coverage requirements is also measured on a combined, Water Utility Fund and Sewer Utility Fund basis.

The Treasury Division maintains unrestricted operating cash reserves for the Sewer Utility Fund. Pursuant to the City's existing financial management policies, these reserves are equivalent to a maximum of 60-days of forecast operations and maintenance expenditures. Any excess cash generated by utility operations are transferred to the Sewer Improvement Subaccounts to fund utility CIP expenditures as described above.

6.3 Existing Sewer Rate Structures

The City categorizes sewer customers into ten different customer classes. For billing the volumetric portion of sewer bills, sewer customers are aggregated into the customer rate classes shown in Table 6-1 (Retail and Wholesale Sewer). The City has approximately 1,800 sewer customers who do not have water service. These customers are billed on a monthly flat rate basis. The City also has approximately eighteen customers who pay extra strength surcharges because their wastewater discharges exceed specific strength limitations related to biochemical oxygen demand, total suspended solids, or oil and grease. The pricing differential between existing 2011 inside city and outside city sewer rates shown is 60%.

Table 6-1 2011 Sewer Utility Rate Structure			
Volumetric Rates (\$ per Thousand Gallons)			
Rate Class	Rate Structure	Inside City	Outside City
Retail Sewer (all metered and unmetered customers)	All Consumption	\$2.47	\$3.96
Wholesale Sewer	All Consumption	-----	\$1.81
Monthly Fixed Charges (\$ per Bill)			
Meter Size		Inside City	Outside City
5/8"		\$5.13	\$8.20
3/4"		\$5.61	\$8.98
1"		\$7.11	\$11.38
1 1/2"		\$9.22	\$14.76
2"		\$14.81	\$23.69
3"		\$56.20	\$89.91
4"		\$71.48	\$114.36
6"		\$107.26	\$171.62
8"		\$148.09	\$236.95
10"		\$173.65	\$277.84
12"		\$229.83	\$367.73
Flat Rate Sewer Service (Customer without Water Service)		\$22.34	\$35.75
Extra Strength Surcharges (\$ per Pound)			
Strength Metric		Inside City	Outside City
Biochemical Oxygen Demand \$ Per Pound Over 250 mg/L		\$0.1627	\$0.2603
Total Suspended Solids \$ Per Pound Over 300 mg/L		\$0.1083	\$0.1733
Oil and Grease \$ Per Pound Over 100 mg/L		\$2.1113	\$3.3782

Section 7: Sewer Utility Financial Plan

7.1 Forecast of Billed Sewer Discharge Volumes

The sewer utility has approximately 135,000 customers who do not have metered sewer discharges. The volumetric portion of their monthly sewer bill is based on their winter average metered water consumption. Approximately 16 sewer customers have metered sewer discharges. The volumetric portion of their sewer bill is based on their actual metered discharge volumes. Approximately 1,800 sewer customers do not receive water service and they are billed on a monthly flat rate basis. Table 7-1 shows an estimate of actual billed sewer discharge volumes during the period 2006 - 2010. Reliable data for 2007 was unavailable.

Table 7-1 Estimated Billed Sewer Discharge Volumes 2006 - 2010 (Gallons)					
Customer Description	2006	2007	2008	2009	2010
Residential Inside	5,686,397,036	No Data	5,691,730,662	5,549,192,664	5,625,973,499
Residential Outside	<u>284,999,964</u>	No Data	<u>285,267,283</u>	<u>278,123,336</u>	<u>281,971,561</u>
Total Residential	5,971,397,000		5,976,997,945	5,827,316,000	5,907,945,060
Commercial / Industrial Inside	3,856,631,579	No Data	3,859,680,741	3,853,778,565	4,051,735,072
Commercial / Industrial Outside	<u>136,510,421</u>	No Data	<u>136,618,350</u>	<u>136,409,435</u>	<u>143,416,360</u>
Total Commercial	3,993,142,000		3,996,299,091	3,990,188,000	4,195,151,432
Municipal / Institutional Inside	267,403,896	No Data	281,173,665	465,929,817	281,238,203
Municipal / Institutional Outside	<u>9,465,104</u>	No Data	<u>9,952,503</u>	<u>16,492,183</u>	<u>9,954,787</u>
Total Municipal / Institutional	276,869,000		291,126,168	482,422,000	291,192,990
Metered Sewer Inside	1,185,655,213	No Data	1,281,539,596	1,279,614,407	1,034,932,729
Metered Sewer Outside	<u>41,967,787</u>	No Data	<u>45,361,738</u>	<u>45,293,593</u>	<u>36,632,771</u>
Total Metered Sewer	1,227,623,000		1,326,901,333	1,324,908,000	1,071,565,500
Wholesale	33,725,000	No Data	No Data	44,202,667	60,911,000
Total	11,502,756,000	No Data	11,994,513,037	11,669,036,667	11,526,765,982

Table 7-2 shows an estimate of the actual number of volumetric sewer accounts during the period 2006 - 2010.

Table 7-2 Estimated Volumetric Sewer Customers 2006 - 2010					
Customer Description	2006	2007	2008	2009	2010
Residential Inside	113,094	113,831	115,542	116,188	116,756
Residential Outside	<u>5,668</u>	<u>5,705</u>	<u>5,791</u>	<u>5,823</u>	<u>5,852</u>
Total Residential	118,762	119,536	121,333	122,011	122,608
Commercial / Industrial Inside	10,759	10,543	10,673	10,642	10,731
Commercial / Industrial Outside	<u>381</u>	<u>373</u>	<u>378</u>	<u>377</u>	<u>380</u>
Total Commercial	11,140	10,916	11,051	11,019	11,111
Municipal / Institutional Inside	743	730	725	723	749
Municipal / Institutional Outside	26	26	26	26	27
Total Municipal / Institutional	769	756	751	749	776
Metered Sewer Inside	0	18	15	15	15
Metered Sewer Outside	<u>0</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>
Total Metered Sewer	0	19	16	16	16
Wholesale	1	1	1	1	1
Total Sewer Utility	130,672	131,228	133,152	133,796	134,512

After estimating historical billed sewer discharge volumes and the number of volumetric customer counts, the next step required to forecast billed sewer discharge volumes is to calculate, on a per account basis, the historical annual sewer discharge volumes for each customer class. Table 7-3 shows an estimate of average consumption per account during the period 2008 - 2010.

Table 7-3 Estimated Actual Annual Average Billed Sewer Discharge Volumes per Account 2008 - 2010				
Customer Class	3-Year Average 2008 - 2010	2-Year Average 2009 - 2010	1- Year Estimated Actual 2010	Used in the Sewer Financial Plan
Inside City				
Residential	48,402	47,973	48,186	47,973
Commercial / Industrial	367,111	369,851	377,573	369,851
Municipal / Institutional	469,250	509,962	375,485	375,485
Metered Sewer	79,913,038	77,151,571	68,995,515	68,995,515
Outside City				
Residential	48,402	47,973	48,184	47,973
Commercial / Industrial	366,888	369,620	377,411	369,620
Municipal / Institutional	461,933	501,505	368,696	368,696
Metered Sewer	42,429,367	40,963,182	36,632,771	40,963,182
Wholesale	No Data	52,556,833	60,911,000	52,556,833

The fourth step required to forecast billed sewer discharge volumes is to forecast the number of sewer customer accounts during each year of the 2011 - 2021 planning horizon. Table 7-4 shows this forecast, which, as is the case with the water utility customer account forecast, assumes an annual growth rate of 0.33% (one-third of one percent) for new residential, commercial, and municipal/institutional accounts. No growth is assumed for metered, flat rate, or wholesale sewer accounts.

The final step required to forecast billed sewer discharge volumes is to multiply the estimated annual average sewer discharge volumes per account as derived in Table 7-3, by the forecast number of sewer customer accounts derived in Table 7-4. This results in an aggregate annual forecast of billed sewer discharge volumes for each customer class as shown in Table 7-5. The Table 7-5 forecast of billed sewer discharge volumes for flat rate sewer customers is based on the assumption that each flat rate sewer customer discharges an average of 73,992 gallons per year.

7.2 Forecast of Sewer Customer Water Meters and Annual Bills

After completing the customer account forecast shown in Table 7-4, it is possible to forecast the number of sewer customer water meters and associated bills that will be sent to customers during each year of the 2011 - 2021 planning horizon. Table 7-6 shows this forecast.

7.3 Forecast Sewer Revenues at Existing Rates

A key component of the financial planning process is to forecast the total amount of volumetric and fixed rate revenue that would be earned if existing 2011 sewer rates were to remain unchanged during the planning horizon. Table 7-7 presents this forecast which is derived from the forecast of billed sewer discharge volumes in Table 7-5 and the forecast of sewer bills by meter size as shown in Table 7-6.

Table 7-4
Forecast Sewer Customer Accounts 2011 - 2021

Description	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Inside City											
Residential	117,142	117,529	117,917	118,307	118,698	119,090	119,483	119,878	120,274	120,671	121,070
Commercial	10,767	10,803	10,839	10,875	10,911	10,948	10,985	11,022	11,059	11,096	11,133
Municipal / Institutional	752	755	758	761	764	767	770	773	776	779	782
Metered Sewer	15	15	15	15	15	15	15	15	15	15	15
Flat Rate Sewer	<u>1,573</u>	<u>1,573</u>	<u>1,573</u>	<u>1,573</u>	<u>1,573</u>	<u>1,573</u>	<u>1,573</u>	<u>1,573</u>	<u>1,573</u>	<u>1,573</u>	<u>1,573</u>
Total Inside City	130,249	130,675	131,102	131,531	131,961	132,393	132,826	133,261	133,697	134,134	134,573
Outside City											
Residential	5,872	5,892	5,912	5,932	5,952	5,972	5,992	6,012	6,032	6,052	6,072
Commercial	382	384	386	388	390	392	394	396	398	400	402
Municipal / Institutional	28	29	30	31	32	33	34	35	36	37	38
Metered Sewer	1	1	1	1	1	1	1	1	1	1	1
Flat Rate Sewer	<u>210</u>	<u>210</u>	<u>210</u>	<u>210</u>	<u>210</u>	<u>210</u>	<u>210</u>	<u>210</u>	<u>210</u>	<u>210</u>	<u>210</u>
Total Outside City	6,493	6,516	6,539	6,562	6,585	6,608	6,631	6,654	6,677	6,700	6,723
Wholesale	1	1	1	1	1	1	1	1	1	1	1
Total Sewer Utility	136,742	137,191	137,641	138,093	138,546	139,001	139,457	139,915	140,374	140,834	141,296

Table 7-5
Forecast Billed Sewer Discharge Volumes 2011 - 2021 (Millions of Gallons)

Description	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Inside City											
Residential	562.0	563.8	565.7	567.6	569.4	571.3	573.2	575.1	577.0	578.9	580.8
Commercial / Industrial	398.2	399.6	400.9	402.2	403.5	404.9	406.3	407.6	409.0	410.4	411.8
Municipal / Institutional	28.2	28.3	28.5	28.6	28.7	28.8	28.9	29.0	29.1	29.3	29.4
Metered Sewer	103.5	103.5	103.5	103.5	103.5	103.5	103.5	103.5	103.5	103.5	103.5
Flat Rate Sewer	<u>11.6</u>	<u>11.6</u>	<u>11.6</u>	<u>11.6</u>	<u>11.6</u>	<u>11.6</u>	<u>11.6</u>	<u>11.6</u>	<u>11.6</u>	<u>11.6</u>	<u>11.6</u>
Total Inside City	1,091.9	1,106.9	1,110.2	1,113.5	1,116.8	1,120.2	1,123.5	1,126.9	1,130.3	1,133.7	1,137.1
Outside City											
Residential	28.2	28.3	28.4	28.5	28.6	28.6	28.7	28.8	28.9	29.0	29.1
Commercial / Industrial	14.1	14.2	14.3	14.3	14.4	14.5	14.6	14.6	14.7	14.8	14.9
Municipal / Institutional	1.0	1.1	1.1	1.1	1.2	1.2	1.3	1.3	1.3	1.4	1.4
Metered Sewer	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Flat Rate Sewer	<u>1.6</u>	<u>1.6</u>	<u>1.6</u>	<u>1.6</u>	<u>1.6</u>	<u>1.6</u>	<u>1.6</u>	<u>1.6</u>	<u>1.6</u>	<u>1.6</u>	<u>1.6</u>
Total Outside City	47.4	49.2	49.4	49.6	49.8	50.0	50.2	50.4	50.6	50.8	51.0
Wholesale	<u>5.3</u>	<u>5.3</u>	<u>5.3</u>	<u>5.3</u>	<u>5.3</u>	<u>5.3</u>	<u>5.3</u>	<u>5.3</u>	<u>5.3</u>	<u>5.3</u>	<u>5.3</u>
Total Sewer Utility	1,144.6	1,161.3	1,164.8	1,168.3	1,171.8	1,175.4	1,179.0	1,182.6	1,186.2	1,189.8	1,193.4

Table 7-6
Forecast of Sewer Customer Meters and Annual Bills 2011 - 2016

Sewer Customer Water Meters											
Meter Size	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
5/8"	65,722	65,941	66,159	66,380	66,601	66,821	67,042	67,266	67,488	67,711	67,937
3/4"	11,695	11,734	11,773	11,812	11,850	11,890	11,932	11,971	12,010	12,050	12,090
1"	55,272	55,457	55,640	55,826	56,011	56,197	56,384	56,571	56,759	56,948	57,138
1 1/2"	15	15	15	15	16	16	16	16	16	16	16
2"	1,945	1,952	1,959	1,965	1,972	1,978	1,987	1,994	2,000	2,007	2,013
3"	169	169	170	170	171	171	173	173	175	175	176
4"	82	83	83	83	83	84	84	84	84	85	85
6"	43	43	43	43	44	44	44	44	44	44	44
8"	10	10	10	10	10	11	11	11	11	11	11
10"	3	3	3	3	3	3	3	3	3	3	3
12"	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Total	134,958	135,409	135,857	136,309	136,763	137,217	137,678	138,135	138,592	139,052	139,515
Sewer Bills											
Meter Size	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
5/8"	788,664	791,292	793,908	796,560	799,212	801,852	804,504	807,192	809,856	812,532	815,244
3/4"	140,340	140,808	141,276	141,744	142,200	142,680	143,184	143,652	144,120	144,600	145,080
1"	663,264	665,484	667,680	669,912	672,132	674,364	676,608	678,852	681,108	683,376	685,656
1 1/2"	180	180	180	180	192	192	192	192	192	192	192
2"	23,340	23,424	23,508	23,580	23,664	23,736	23,844	23,928	24,000	24,084	24,156
3"	2,028	2,028	2,040	2,040	2,052	2,052	2,076	2,076	2,100	2,100	2,112
4"	984	996	996	996	996	1,008	1,008	1,008	1,008	1,020	1,020
6"	516	516	516	516	528	528	528	528	528	528	528
8"	120	120	120	120	120	132	132	132	132	132	132
10"	36	36	36	36	36	36	36	36	36	36	36
12"	<u>24</u>	<u>24</u>	<u>24</u>	<u>24</u>	<u>24</u>	<u>24</u>	<u>24</u>	<u>24</u>	<u>24</u>	<u>24</u>	<u>24</u>
Total	1,619,496	1,624,908	1,630,284	1,635,708	1,641,156	1,646,604	1,652,136	1,657,620	1,663,104	1,668,624	1,674,180

Table 7-7
Forecast Sewer Utility Revenue at Existing Rates 2011 - 2021 (\$ Thousands)

Description	Revenue	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Inside City Residential	Volumetric	13,880.6	13,926.4	13,972.4	14,018.6	14,064.9	14,111.4	14,158.0	14,204.8	14,251.7	14,298.7	14,346.0
	Fixed	<u>8,417.4</u>	<u>8,445.2</u>	<u>8,473.0</u>	<u>8,501.1</u>	<u>8,529.1</u>	<u>8,557.3</u>	<u>8,585.7</u>	<u>8,614.0</u>	<u>8,642.4</u>	<u>8,670.9</u>	<u>8,699.6</u>
	Total	\$22,298.0	\$22,371.6	\$22,445.4	\$22,519.7	\$22,594.1	\$22,668.7	\$22,743.6	\$22,818.8	\$22,894.1	\$22,969.7	\$23,045.6
Inside City Commercial	Volumetric	9,836.0	9,868.9	9,901.8	9,934.7	9,967.5	10,001.3	10,035.1	10,069.0	10,102.8	10,136.6	10,170.4
	Fixed	<u>1,182.8</u>	<u>1,186.9</u>	<u>1,190.8</u>	<u>1,193.9</u>	<u>1,199.2</u>	<u>1,205.1</u>	<u>1,209.0</u>	<u>1,212.3</u>	<u>1,216.3</u>	<u>1,220.3</u>	<u>1,224.3</u>
	Total	\$11,018.8	\$11,055.8	\$11,092.6	\$11,128.5	\$11,166.7	\$11,206.4	\$11,244.2	\$11,281.3	\$11,319.0	\$11,356.8	\$11,394.6
Inside City Municipal/Institutional	Volumetric	697.4	700.2	703.0	705.8	708.6	711.4	714.1	716.9	719.7	722.5	725.3
	Fixed	<u>82.8</u>	<u>83.0</u>	<u>83.3</u>	<u>83.5</u>	<u>83.8</u>	<u>84.0</u>	<u>84.4</u>	<u>84.6</u>	<u>84.7</u>	<u>85.1</u>	<u>85.4</u>
	Total	\$780.2	\$783.2	\$786.3	\$789.3	\$792.4	\$795.4	\$798.6	\$801.5	\$804.4	\$807.6	\$810.6
Inside City Metered Sewer	Volumetric	2,556.3	2,556.3	2,556.3	2,556.3	2,556.3	2,556.3	2,556.3	2,556.3	2,556.3	2,556.3	2,556.3
	Fixed	<u>11.6</u>	<u>11.6</u>	<u>11.6</u>	<u>11.6</u>	<u>11.6</u>	<u>11.6</u>	<u>11.6</u>	<u>11.6</u>	<u>11.6</u>	<u>11.6</u>	<u>11.6</u>
	Total	\$2,567.9	\$2,567.9	\$2,567.9	\$2,567.9	\$2,567.9	\$2,567.9	\$2,567.9	\$2,567.9	\$2,567.9	\$2,567.9	\$2,567.9
Inside City Flat Rate	Total	\$421.7	\$421.7	\$421.7	\$421.7	\$421.7	\$421.7	\$421.7	\$421.7	\$421.7	\$421.7	\$421.7
Total Inside City		\$37,086.5	\$37,200.2	\$37,313.9	\$37,427.1	\$37,542.7	\$37,660.0	\$37,776.0	\$37,891.1	\$38,007.1	\$38,123.6	\$38,240.4
Outside City Residential	Volumetric	1,115.5	1,119.3	1,123.1	1,126.9	1,130.7	1,134.5	1,138.3	1,142.1	1,145.9	1,149.7	1,153.5
	Fixed	<u>674.9</u>	<u>677.2</u>	<u>679.5</u>	<u>681.8</u>	<u>684.1</u>	<u>686.4</u>	<u>688.7</u>	<u>691.0</u>	<u>693.3</u>	<u>695.6</u>	<u>697.9</u>
	Total	\$1,790.4	\$1,796.5	\$1,802.6	\$1,808.7	\$1,814.8	\$1,820.9	\$1,827.0	\$1,833.1	\$1,839.2	\$1,845.3	\$1,851.4
Outside City Commercial	Volumetric	559.1	562.1	565.0	567.9	570.8	573.8	576.7	579.6	582.6	585.5	588.4
	Fixed	<u>65.8</u>	<u>65.9</u>	<u>66.0</u>	<u>66.6</u>	<u>66.8</u>	<u>66.9</u>	<u>68.5</u>	<u>68.7</u>	<u>68.9</u>	<u>69.4</u>	<u>69.6</u>
	Total	\$624.9	\$628.0	\$631.0	\$634.5	\$637.6	\$640.7	\$645.2	\$648.4	\$651.4	\$654.9	\$658.0
Outside City Municipal/Institutional	Volumetric	40.9	42.3	43.8	45.3	46.7	48.2	49.6	51.1	52.6	54.0	55.5
	Fixed	<u>3.7</u>	<u>4.3</u>	<u>4.3</u>	<u>4.4</u>	<u>4.5</u>	<u>4.5</u>	<u>4.7</u>	<u>5.1</u>	<u>6.3</u>	<u>6.3</u>	<u>6.4</u>
	Total	\$44.6	\$46.6	\$48.1	\$49.7	\$51.2	\$52.7	\$54.4	\$56.2	\$58.9	\$60.4	\$61.9
Outside City Metered Sewer	Volumetric	162.2	162.2	162.2	162.2	162.2	162.2	162.2	162.2	162.2	162.2	162.2
	Fixed	<u>0.1</u>	<u>0.1</u>	<u>0.1</u>	<u>0.1</u>	<u>0.1</u>	<u>0.1</u>	<u>0.1</u>	<u>0.1</u>	<u>0.1</u>	<u>0.1</u>	<u>0.1</u>
	Total	\$162.4	\$162.4	\$162.4	\$162.4	\$162.4	\$162.4	\$162.4	\$162.4	\$162.4	\$162.4	\$162.4
Outside City Flat Rate	Total	\$90.1	\$90.1	\$90.1	\$90.1	\$90.1	\$90.1	\$90.1	\$90.1	\$90.1	\$90.1	\$90.1
Total Outside City		\$2,712.4	\$2,723.5	\$2,734.1	\$2,745.3	\$2,756.1	\$2,766.7	\$2,779.0	\$2,790.1	\$2,801.9	\$2,813.0	\$2,823.8
Wholesale	Volumetric	95.1	95.1	95.1	95.1	95.1	95.1	95.1	95.1	95.1	95.1	95.1
	Fixed	<u>8.8</u>	<u>8.8</u>	<u>8.8</u>	<u>8.8</u>	<u>8.8</u>	<u>8.8</u>	<u>8.8</u>	<u>8.8</u>	<u>8.8</u>	<u>8.8</u>	<u>8.8</u>
	Total	\$104.0	\$104.0	\$104.0	\$104.0	\$104.0	\$104.0	\$104.0	\$104.0	\$104.0	\$104.0	\$104.0
Total Sewer Utility		\$39,902.9	\$40,027.7	\$40,152.0	\$40,276.3	\$40,402.8	\$40,530.7	\$40,658.9	\$40,785.2	\$40,913.0	\$41,040.5	\$41,168.1

7.4 Forecast Sewer CIP Expenditures and Financing

The CIP expenditure forecast used by RFC in the sewer utility financial plan was supplied by City staff. Staff's forecast features inflation-adjusted CIP expenditures for the period 2011 - 2020 and RFC did not apply any additional inflation factors. The sewer utility financial plan prepared by RFC covers the period 2011 - 2021. In order to develop a complete profile of CIP expenditures over the entire financial planning horizon, RFC assumed that 2021 CIP expenditures will be \$22.8 million which is equivalent to the 2020 forecast of sewer CIP expenditures developed by City staff.

The City funds sewer CIP expenditures through the Sewer Improvement Subaccount which receives the proceeds from revenue bond and general obligation debt issues as well as operating surpluses transferred from the Sewer Utility Fund. Operating surpluses from the Sewer Improvement Fund reflect the excess of sewer rate revenues over operating expenses and thus can be thought of as direct sewer pay-as-you-go rate financing of CIP expenditures. The inflation-adjusted CIP expenditures contained in the 2011 - 2021 sewer utility financial plan are forecast to be \$304.7 million. The forecast financing sources for these expenditures are a 2011 beginning balance of \$13.3 million in the Sewer Improvement Subaccount which reflects the unspent proceeds from previous revenue bond issues; \$34.2 million of rate revenue financing generated from operating surpluses in the Sewer Utility Fund; the issuance of new revenue bonds in the amount of \$109.6 million which result in net proceeds of \$100.8 million after the subtraction of debt issuance costs; and the issuance of general obligation bonds in the amount of \$161.1 million which result in net proceeds of \$158.7 million after the payment of debt issuance costs. The general obligation bonds are forecast to be issued during the period 2015 - 2021 to finance the construction of nutrient removal facilities at the Lower Arkansas River Wastewater Treatment plant.

Table 7-8 provides a forecast of key Sewer Improvement Subaccount metrics which include a forecast of CIP expenditures and associated CIP financing sources. The Sewer Improvement Subaccount end of year balances shown in Table 7-8 reflect an amount equal to 25% of the subsequent year's forecast CIP expenditures.

7.5 Forecast of Sewer O&M Expenditures

The sewer utility financial plan contains a forecast of O&M expenditures which was developed in consultation with City staff. The starting point for the O&M expenditure forecast was the adopted 2011 and approved 2012 Public Works & Utilities Department budget. Table 7-9 shows the inflation rates used in O&M forecast as developed in consultation with City staff. Table 7-10 shows a summarized forecast of O&M expenditures during the 2011 - 2021 planning horizon. The O&M expenditures shown in Table 7-10 include reimbursements from the Sewer Utility Fund to the Water Utility Fund and forecast "planned savings" from unfilled vacancies.

Table 7-8
Forecast Sewer CIP Expenditures and CIP Funding Sources 2011 - 2021 (\$ Thousands)

Metric	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Beginning Balance - Sewer Improvement Subaccount	\$13,026.2	\$5,690.0	\$4,336.6	\$2,850.1	\$2,271.2	\$2,176.5	\$2,993.6	\$5,016.5	\$2,489.4	\$2,443.2	\$2,185.6
Revenue Bonds Issued	\$19,500.0	\$22,500.0	\$16,000.0	\$9,500.0	\$9,500.0	\$7,000.0	\$7,500.0	\$11,500.0	\$2,500.0	\$2,000.0	\$2,100.0
Revenue Bond Issuance Costs	<u>\$1,560.0</u>	<u>\$1,800.0</u>	<u>\$1,280.0</u>	<u>\$760.0</u>	<u>\$760.0</u>	<u>\$560.0</u>	<u>\$600.0</u>	<u>\$920.0</u>	<u>\$200.0</u>	<u>\$160.0</u>	<u>\$168.0</u>
Net Revenue Bonds Applied to CIP	\$17,940.0	\$20,700.0	\$14,720.0	\$8,740.0	\$8,740.0	\$6,440.0	\$6,900.0	\$10,580.0	\$2,300.0	\$1,840.0	\$1,932.0
GO Bonds Issued	\$0.0	\$0.0	\$0.0	\$0.0	\$9,180.0	\$9,180.0	\$15,444.0	\$15,120.0	\$48,600.0	\$48,600.0	\$15,000.0
GO Bond Issuance Costs	<u>\$0.0</u>	<u>\$0.0</u>	<u>\$0.0</u>	<u>\$0.0</u>	<u>\$137.7</u>	<u>\$137.7</u>	<u>\$231.7</u>	<u>\$226.8</u>	<u>\$729.0</u>	<u>\$729.0</u>	<u>\$225.0</u>
Net GO Bonds Applied to CIP	\$0.0	\$0.0	\$0.0	\$0.0	\$9,042.3	\$9,042.3	\$15,212.3	\$14,893.2	\$47,871.0	\$47,871.0	\$14,775.0
Transfers from the Sewer Utility Fund	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$2,700.0	\$6,000.0	\$6,200.0	\$7,000.0	\$6,400.0	\$5,900.0
CIP Financed by Revenue Bonds	\$25,276.2	\$22,053.4	\$16,206.6	\$9,318.8	\$8,697.0	\$8,185.2	\$10,645.5	\$19,080.3	\$8,617.3	\$7,768.6	\$7,768.6
CIP Financed by GO Bonds	<u>\$0.0</u>	<u>\$0.0</u>	<u>\$0.0</u>	<u>\$0.0</u>	<u>\$9,180.0</u>	<u>\$9,180.0</u>	<u>\$15,444.0</u>	<u>\$15,120.0</u>	<u>\$48,600.0</u>	<u>\$48,600.0</u>	<u>\$15,000.0</u>
Total CIP Expenditures	\$25,276.2	\$22,053.4	\$16,206.6	\$9,318.8	\$17,877.0	\$17,365.2	\$26,089.5	\$34,200.3	\$57,217.3	\$56,368.6	\$22,768.6
Ending Balance - Sewer Improvement Subaccount	\$5,690.0	\$4,336.6	\$2,850.1	\$2,271.2	\$2,176.5	\$2,993.6	\$5,016.5	\$2,489.4	\$2,443.2	\$2,185.6	\$2,024.0

Table 7-9
Inflation Rates Used in the Sewer O&M Expenditures Forecast

Expenditure Category	Expenditure Inflation Rate
General Inflation (Applied to Expenditures not Specified Below)	3.00% Annual Growth Beginning in 2013
Salaries and Benefits	3.00% Annual Growth Beginning in 2013
Health Insurance	8.00% Annual Growth Beginning in 2013
Gas & Electricity	3.00% Annual Growth Beginning in 2013
Industrial Chemicals	3.00% Annual Growth Beginning in 2013
Reimbursements to the Water Utility Find	Annual Calculation Specified by City Staff
Franchise Fees	5.00% of Forecast Water Utility Revenues
Contributions to Other Funds	2.00% Annual Growth Beginning in 2013
Reimbursements to Other Departments	3.00% Annual Growth Beginning in 2013
Planned Savings	Amounts as Specified by City Staff
Bad Debt Expense	% Annual Growth Beginning in 2013 Based on the % Increase in Water Rate Revenues

Table 7-10
Forecast Sewer Operations & Maintenance Expenditures 2011 - 2021 (\$ Thousands)

Division	2011 Adopted Budget	2012 Approved Budget	2013	2014	2015	2016	2017	2018	2019	2020	2021
Sewer Administration											
Personal services	594.0	612.1	630.4	649.3	668.8	688.9	709.5	730.8	752.8	775.3	798.6
Contractuals	1,657.7	1,671.2	1,787.1	1,854.4	1,921.8	1,988.9	2,055.2	2,123.9	2,195.0	2,268.5	2,344.7
Commodities	104.5	108.5	111.8	115.2	118.6	122.2	125.8	129.6	133.5	137.5	141.6
Interfund Transfers	\$2,742.3	\$2,827.6	\$2,893.4	\$2,960.8	\$3,029.9	\$3,100.6	\$3,173.1	\$3,247.3	\$3,323.3	\$3,401.2	\$3,480.9
Other	<u>2,135.8</u>	<u>2,399.2</u>	<u>2,606.2</u>	<u>2,796.0</u>	<u>2,977.5</u>	<u>3,146.6</u>	<u>3,299.2</u>	<u>3,459.7</u>	<u>3,628.3</u>	<u>3,805.8</u>	<u>3,992.4</u>
Total	\$7,234.3	\$7,618.6	\$8,028.9	\$8,375.7	\$8,716.6	\$9,047.2	\$9,362.9	\$9,691.3	\$10,032.8	\$10,388.3	\$10,758.3
Sewer Treatment											
Personal services	3,535.6	3,580.1	3,719.3	3,865.1	4,018.1	4,178.6	4,347.2	4,524.2	4,710.3	4,906.0	5,153.0
Contractuals	4,901.4	5,049.3	5,200.8	5,356.8	5,517.5	5,683.0	5,853.5	6,029.1	6,210.0	6,396.3	6,588.2
Commodities	3,021.0	3,176.3	3,271.6	3,369.7	3,470.8	3,574.9	3,682.2	3,792.6	3,906.4	4,023.6	4,144.3
Capital outlay	<u>662.5</u>	<u>969.5</u>	<u>548.9</u>	<u>571.2</u>	<u>594.4</u>	<u>618.5</u>	<u>643.6</u>	<u>669.7</u>	<u>696.9</u>	<u>725.2</u>	<u>725.2</u>
Total	\$12,120.42	\$12,775.22	\$12,740.52	\$13,162.83	\$13,600.79	\$14,055.09	\$14,526.48	\$15,015.73	\$15,523.66	\$16,051.15	\$16,610.73
Sewer Maintenance											
Personal services	4,825.9	4,952.5	5,142.3	5,341.2	5,549.5	5,768.0	5,997.2	6,237.8	6,490.4	6,755.8	7,051.0
Contractuals	747.4	748.7	771.1	794.3	818.1	842.6	867.9	894.0	920.8	948.4	976.9
Commodities	512.5	617.3	635.8	654.9	674.5	694.8	715.6	737.1	759.2	782.0	805.4
Capital outlay	<u>831.5</u>	<u>874.4</u>	<u>473.4</u>	<u>492.6</u>	<u>512.6</u>	<u>533.4</u>	<u>555.0</u>	<u>577.6</u>	<u>601.0</u>	<u>625.4</u>	<u>650.8</u>
Total	\$6,917.31	\$7,192.85	\$7,022.64	\$7,282.91	\$7,554.76	\$7,838.82	\$8,135.79	\$8,446.39	\$8,771.40	\$9,111.64	\$9,484.13
Total O&M Expenditures	\$26,272.03	\$27,586.64	\$27,792.10	\$28,821.45	\$29,872.15	\$30,941.09	\$32,025.13	\$33,153.38	\$34,327.86	\$35,551.11	\$36,853.15

7.6 Forecast of Sewer Debt Service Expenditures

Table 7-11 shows the forecast debt service expenditures included in the sewer utility financial plan. They include the debt service associated with:

- Existing revenue bond debt issues, applicable to the sewer utility, made prior to 2011. The debt service for each of these existing revenue bond issues is based on their specified principal and interest repayment schedules as provided by City staff.
- Forecast revenue bond issues, in the amount of \$109.6 million, to fund planned sewer CIP expenditures (see Table 7-8). The debt service for each of these forecast revenue bond debt issues is based on a 20-year term and a 6.00% annual interest rate. Bond issuance costs are estimated to be equivalent to 8.00% of the gross amount issued. During the year of issue, debt service for the revenue bonds is assumed to be equivalent to six-months of interest. Level annual principal and interest payments are assumed to begin in the year following issuance.
- Forecast general obligation bond issues, in the amount of \$161.1 million, to fund the construction of nutrient removal facilities at the Lower Arkansas River Wastewater Treatment plant during the period 2015 - 2021. The debt service for these forecast general obligation debt issues is based on a 20-year term and a 5.00% annual interest rate. Bond issuance costs are estimated to be equivalent to 1.50% of the gross amount issued. During the year of issue, debt service for the revenue bonds is assumed to be equivalent to six-months of interest. Level annual principal and interest payments are assumed to begin in the year following issuance.

7.7 Forecast Sewer Non-Rate Revenues

The sewer utility financial plan contains a forecast of annual revenues derived from miscellaneous non-rate sources. This forecast, which is based on the approved 2012 Sewer Utility Fund budget, is shown in Table 7-12.

Table 7-11
Forecast Sewer Debt Service Expenditures 2011 - 2021 (\$ Thousands)

Debt Service Component	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Existing Revenue Bonds											
Principal	9,424.5	10,303.8	9,822.8	10,240.6	10,754.6	11,330.4	9,468.1	9,953.1	9,310.7	9,384.6	9,804.3
Interest	<u>9,165.7</u>	<u>8,790.6</u>	<u>8,350.5</u>	<u>7,924.4</u>	<u>7,465.0</u>	<u>6,960.3</u>	<u>6,422.1</u>	<u>5,971.1</u>	<u>5,490.2</u>	<u>5,045.7</u>	<u>4,598.2</u>
Total	\$18,590.2	\$19,094.4	\$18,173.3	\$18,165.0	\$18,219.6	\$18,290.7	\$15,890.3	\$15,924.2	\$14,800.9	\$14,430.3	\$14,402.6
New Revenue Bonds											
Principal	0.0	530.1	1,173.6	1,678.9	2,037.9	2,418.4	2,753.8	3,123.0	3,623.0	3,908.3	4,197.2
Interest	<u>585.0</u>	<u>1,845.0</u>	<u>2,968.2</u>	<u>3,662.8</u>	<u>4,132.0</u>	<u>4,504.8</u>	<u>4,794.7</u>	<u>5,199.4</u>	<u>5,432.1</u>	<u>5,349.7</u>	<u>5,238.2</u>
Total	\$585.0	\$2,375.1	\$4,141.8	\$5,341.7	\$6,170.0	\$6,923.2	\$7,548.5	\$8,322.4	\$9,055.0	\$9,258.0	\$9,435.3
Existing GO Debt											
Principal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Interest	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
New GO Debt											
Principal	0.0	0.0	0.0	0.0	0.0	138.2	283.3	529.9	783.9	1,554.6	2,363.9
Interest	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>229.5</u>	<u>688.5</u>	<u>1,297.2</u>	<u>2,047.1</u>	<u>3,613.6</u>	<u>6,004.4</u>	<u>7,516.7</u>
Total	\$0.0	\$0.0	\$0.0	\$0.0	\$229.5	\$826.7	\$1,580.4	\$2,577.0	\$4,397.6	\$7,559.1	\$9,880.6
Total Debt Service	\$19,175.2	\$21,469.5	\$22,315.1	\$23,506.7	\$24,619.0	\$26,040.6	\$25,019.2	\$26,823.6	\$28,253.5	\$31,247.3	\$33,718.5

Table 7-12
Forecast Sewer Non-Rate Revenue 2011 - 2021 (\$ Thousands)

Non-Rate Revenue Item	2011 Adopted Budget	2012 Approved Budget	2013	2014	2015	2016	2017	2018	2019	2020	2021
Grease Trap Charge	147.0	148.5	148.5	148.5	148.5	148.5	148.5	148.5	148.5	148.5	148.5
Special Industrial Sales	755.0	770.0	770.0	770.0	770.0	770.0	770.0	770.0	770.0	770.0	770.0
Late Payment Charges	130.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0
Plant Equity Fees	1,564.5	1,689.7	1,695.3	1,700.9	1,706.5	1,712.1	1,717.7	1,723.4	1,729.1	1,734.8	1,740.5
Other	<u>609.9</u>	<u>615.3</u>	<u>615.3</u>	<u>615.3</u>	<u>615.3</u>	<u>615.3</u>	<u>615.3</u>	<u>615.3</u>	<u>615.3</u>	<u>615.3</u>	<u>615.3</u>
Total	\$3,206.5	\$3,343.5	\$3,349.1	\$3,354.7	\$3,360.3	\$3,365.9	\$3,371.6	\$3,377.3	\$3,382.9	\$3,388.6	\$3,394.4

7.8 Comprehensive Sewer Utility Financial Plan

The culmination of the sewer utility financial planning process is the creation of a comprehensive cash flow forecast that shows the annual increase in revenues from sewer rates required to recover the cost of: 1) O&M expenditures; 2) debt service expenditures; 3) transfers to the Sewer Improvement Subaccount to fund CIP expenditures; and, 4) the maintenance of Sewer Utility Fund reserves equivalent to approximately 60 days of forecast O&M expenditures.

Table 7-14 shows the comprehensive sewer utility financial plan for the period 2011 - 2021. Although the City calculates revenue bond debt service coverage requirements on a consolidated, combined water and sewer utility basis, Table 7-14 also shows forecast sewer utility standalone debt service coverage ratios developed under the guidance of City staff. Table 7-13 shows an expanded detail of the forecast 2012 standalone sewer utility debt service coverage calculation.

Table 7-13 Detail of the Forecast 2012 Sewer Utility DSCR Calculation	
Item	Amount
Revenues - Total Sewer Related	\$46,973,671
Gross O&M Expenditures Before Adjustment	
01 - Personal Services	\$9,144,679
02 - Contractual Services	\$7,469,185
03 - Commodities	\$3,902,114
510 - Interfund Transfers	\$2,827,578
520 - Debt Service	\$0
04 - Capital Outlay	\$1,843,900
05 - Other	<u>\$2,399,184</u>
Total Gross O&M Expenditures Before Adjustment	\$27,586,640
O&M Expenditure Adjustments	
Less: Account 510 Interfund Transfers (Sewer Administration)	\$2,827,578
Less: Account 5300 Contingency (Sewer Administration)	\$250,000
Less: Account 5308 - Engineering Overhead (Sewer Administration)	\$1,500
Less: Account 4XXX Capital Outlay (Sewer Treatment)	\$969,500
Less: Account 4XXX Capital Outlay (Sewer Maintenance)	<u>\$874,400</u>
Total O&M Expenditure Adjustments	\$4,922,978
Net O&M Expenditures for DSCR Calculation	\$22,663,662
Net Revenues Available for DSCR Calculation	\$24,310,009
DSCR Calculation - Revenue Bonds	
Existing Revenue Bond Debt Service	\$19,094,434
New Revenue Bond Debt Service	\$2,375,099
Total Revenue Bond Debt Service	\$21,469,533
Calculated DSCR - Revenue Bonds	1.13
DSCR Calculation - Revenues Bonds & General Obligation Debt	
Existing Revenue Bond Debt Service	\$19,094,434
New Revenue Bond Debt Service	\$2,375,099
Existing General Obligation Debt Service	\$0
New General Obligation Debt Service	\$0
Total Revenue Bond and General Obligation Debt Service	\$21,469,533
Calculated DSCR - Revenue Bonds & General Obligation Debt	1.13

Table 7-14
Sewer Utility Comprehensive Financial Plan 2011 - 2021 (\$ Thousands)

Metric	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
% Increase in Sewer Rate Revenues	-----	9.00%	8.00%	7.00%	6.00%	5.00%	5.00%	5.00%	5.00%	5.00%	4.50%
Sewer Utility Fund Operating Surplus / (Deficit)											
Sewer Rate Revenue at Existing 2011 Rates	39,902.9	40,027.7	40,152.0	40,276.3	40,402.8	40,530.7	40,658.9	40,785.2	40,913.0	41,040.5	41,168.1
Incremental Revenues from Sewer Rate Increases	<u>0.0</u>	<u>3,602.5</u>	<u>7,114.9</u>	<u>10,455.9</u>	<u>13,542.2</u>	<u>16,290.9</u>	<u>19,192.5</u>	<u>22,254.0</u>	<u>25,485.5</u>	<u>28,895.2</u>	<u>32,142.0</u>
Total Sewer Rate Revenues	\$39,902.9	\$43,630.2	\$47,266.9	\$50,732.2	\$53,945.0	\$56,821.6	\$59,851.4	\$63,039.2	\$66,398.5	\$69,935.8	\$73,310.1
Total Non-Rate Revenues and Receipts	<u>3,206.5</u>	<u>3,343.5</u>	<u>3,349.1</u>	<u>3,354.7</u>	<u>3,360.3</u>	<u>3,365.9</u>	<u>3,371.6</u>	<u>3,377.3</u>	<u>3,382.9</u>	<u>3,388.6</u>	<u>3,394.4</u>
Total Revenues and Receipts	\$43,109.3	\$46,973.7	\$50,616.0	\$54,086.9	\$57,305.3	\$60,187.5	\$63,223.0	\$66,416.4	\$69,781.5	\$73,324.4	\$76,704.4
Total Operations & Maintenance Expenditures	\$26,272.0	\$27,586.6	\$27,792.1	\$28,821.4	\$29,872.2	\$30,941.1	\$32,025.1	\$33,153.4	\$34,327.9	\$35,551.1	\$36,853.2
Total Revenue Bond Debt Service	19,175.2	21,469.5	22,315.1	23,506.7	24,389.5	25,213.9	23,438.8	24,246.6	23,855.9	23,688.2	23,837.9
Total General Obligation Debt Service	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>229.5</u>	<u>826.7</u>	<u>1,580.4</u>	<u>2,577.0</u>	<u>4,397.6</u>	<u>7,559.1</u>	<u>9,880.6</u>
Operating Surplus / (Deficit)	(\$2,337.9)	(\$2,082.5)	\$508.9	\$1,758.8	\$2,814.1	\$3,205.8	\$6,178.6	\$6,439.5	\$7,200.1	\$6,526.0	\$6,132.8
Transfer to the Sewer Improvement Fund	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>2,700.0</u>	<u>6,000.0</u>	<u>6,200.0</u>	<u>7,000.0</u>	<u>6,400.0</u>	<u>5,900.0</u>
Net Contribution to the Sewer Revenue Fund	(\$2,337.9)	(\$2,082.5)	\$508.9	\$1,758.8	\$2,814.1	\$505.8	\$178.6	\$239.5	\$200.1	\$126.0	\$232.8
Sewer Utility Fund											
Beginning Balance	4,030.2	1,692.3	(390.2)	118.7	1,877.4	4,691.5	5,197.4	5,376.0	5,615.5	5,815.6	5,941.6
Net Contribution to the Sewer Revenue Fund	<u>(2,337.9)</u>	<u>(2,082.5)</u>	<u>508.9</u>	<u>1,758.8</u>	<u>2,814.1</u>	<u>505.8</u>	<u>178.6</u>	<u>239.5</u>	<u>200.1</u>	<u>126.0</u>	<u>232.8</u>
Ending Balance	\$1,692.3	(\$390.2)	\$118.7	\$1,877.4	\$4,691.5	\$5,197.4	\$5,376.0	\$5,615.5	\$5,815.6	\$5,941.6	\$6,174.4
Debt Service Coverage Calculations											
Total Sewer Related Revenues	\$43,109.3	\$46,973.7	\$50,616.0	\$54,086.9	\$57,305.3	\$60,187.5	\$63,223.0	\$66,416.4	\$69,781.5	\$73,324.4	\$76,704.4
Gross O&M Expenditures Before Adjustment	26,272.0	27,586.6	27,792.1	28,821.4	29,872.2	30,941.1	32,025.1	33,153.4	34,327.9	35,551.1	36,853.2
O&M Items Excluded from the DSCR Calculation	<u>4,487.8</u>	<u>4,923.0</u>	<u>4,173.2</u>	<u>4,289.8</u>	<u>4,410.0</u>	<u>4,533.9</u>	<u>4,661.5</u>	<u>4,793.1</u>	<u>4,928.7</u>	<u>5,068.5</u>	<u>5,183.2</u>
Net O&M Expenditures for DSCR Calculation	\$21,784.3	\$22,663.7	\$23,618.9	\$24,531.6	\$25,462.1	\$26,407.2	\$27,363.6	\$28,360.3	\$29,399.1	\$30,482.6	\$31,670.0
Net Revenues Available for DSCR Calculation	\$21,325.1	\$24,310.0	\$26,997.1	\$29,555.3	\$31,843.1	\$33,780.3	\$35,859.4	\$38,056.1	\$40,382.3	\$42,841.8	\$45,034.5
Total Revenue Bond Debt Service	\$19,175.2	\$21,469.5	\$22,315.1	\$23,506.7	\$24,389.5	\$25,213.9	\$23,438.8	\$24,246.6	\$23,855.9	\$23,688.2	\$23,837.9
Calculated DSCR - Revenue Bonds	1.11	1.13	1.21	1.26	1.31	1.34	1.53	1.57	1.69	1.81	1.89
Total Revenue Bond & GO Debt Service	\$19,175.2	\$21,469.5	\$22,315.1	\$23,506.7	\$24,619.0	\$26,040.6	\$25,019.2	\$26,823.6	\$28,253.5	\$31,247.3	\$33,718.5
Calculated DSCR - Revenue Bonds & GO Debt	1.11	1.13	1.21	1.26	1.29	1.30	1.43	1.42	1.43	1.37	1.34

7.9 Sewer Utility Revenue Requirement from Rates

An outcome of the financial planning process is a determination of the revenue requirement from sewer rates. The two industry accepted methods for calculating revenue requirements are the "cash needs" method and the "utility basis" method. The cash needs method expresses the revenue requirement as the total amount of rate revenue required to fund O&M expenditures and the capital costs associated with debt service expenditures and rate financed CIP. Under the cash needs method, the revenue requirement from sewer rates can be expressed according to the following equation:

$$RR = O\&M + DS + CIP$$

Where: RR = Revenue Requirement from Rates
 O&M = Operation and Maintenance Expenses
 DS = Debt Service Payments
 CIP = Rate Financed CIP

Alternatively, the revenue requirement can also be calculated using the utility basis method. The utility basis method expresses the revenue requirement as the amount of rate revenue required to recover the cost of O&M expenses and the capital costs associated with accrual basis depreciation and a rate of return on the assets constructed to provide utility service. Under the utility basis method, the revenue requirement from sewer rates can be expressed according to the following equation:

$$RR = O\&M + DEP + (ROR * RB)$$

Where: RR = Revenue Requirement from Rates
 O&M = Operation and Maintenance Expenses
 DEP = Depreciation Expenses
 ROR = Rate-of-Return on Capital Invested in Utility Assets
 RB = Net Book Value of Utility Assets (Rate Base)

The utility basis method of revenue requirement calculation is commonly used by investor-owned utilities because it features a rate-of-return on invested capital component. This allows utility investors to earn a return on the equity and debt capital they invested to construct utility assets. These invested assets are commonly referred to as the "rate base" assets of the utility because they play a critical role in defining the level of rates paid by customers.

The utility basis method is also used by publicly-owned municipal utilities that provide service to customers in adjoining outside city jurisdictions. Conceptually, inside city customers are viewed as the owners of the municipal utility that provides service to outside city customers. As a result, inside city customer must earn a return on the capital they invested to provide utility service to outside city customers. Because the City provides service to outside city customers, RFC used the utility method of revenue requirement calculation in the sewer cost of service study as described in Section 8 of this report.

Table 7-15 shows the 2012 - 2016 sewer utility revenue requirement under both the cash needs and utility basis methods. The depreciation expense shown in Table 7-15 was estimated by RFC based on the combined water and sewer utility depreciation expense, as reported in the City's 2010 Comprehensive Annual Financial Report. This amount was allocated between the water and sewer utilities based on the gross book value of water and

sewer utility assets on December 31, 2010. The forecast net book value of sewer utility assets shown in Table 7-15 is based on an analysis by RFC that took into consideration the net book value of sewer utility assets at December 31, 2010, sewer utility construction work in progress at December 31, 2010, and forecast sewer CIP expenditures during the period 2011 - 2016.

Table 7-15 Forecast Sewer Utility Revenue Requirement from Rates 2012 - 2016 (\$ Thousands)					
Cash Needs Method of Revenue Requirement Calculation					
Metric	2012	2013	2014	2015	2016
Operations and Maintenance Expenditures					
Sewer Administration	7,618.6	8,028.9	8,375.7	8,716.6	9,047.2
Sewer Treatment	12,775.2	12,740.5	13,162.8	13,600.8	14,055.1
Sewer Maintenance	<u>7,192.9</u>	<u>7,022.6</u>	<u>7,282.9</u>	<u>7,554.8</u>	<u>7,838.8</u>
Total Operations and Maintenance Expenditures	\$27,586.6	\$27,792.1	\$28,821.4	\$29,872.2	\$30,941.1
Debt Service					
Total Existing Revenue Bond Debt Service	19,094.4	18,173.3	18,165.0	18,219.6	18,290.7
Total New Revenue Bond Debt Service	2,375.1	4,141.8	5,341.7	6,170.0	6,923.2
Total New General Obligation Debt Service	0.0	0.0	0.0	0.0	0.0
Total New General Obligation Debt Service	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>229.5</u>	<u>826.7</u>
Total Debt Service Expenditures	\$21,469.5	\$22,315.1	\$23,506.7	\$24,619.0	\$26,040.6
Contributions to Funds					
Contribution to Sewer Improvement Fund	0.0	0.0	0.0	0.0	2,700.0
Contribution to Sewer Revenue Fund	<u>(2,082.5)</u>	<u>508.9</u>	<u>1,758.8</u>	<u>2,814.1</u>	<u>505.8</u>
Total Contributions	(\$2,082.5)	\$508.9	\$1,758.8	\$2,814.1	\$3,205.8
Total Revenue Requirement Before Non-Rate Offsets	\$46,973.7	\$50,616.0	\$54,086.9	\$57,305.3	\$60,187.5
Total Non-Rate Revenues / Receipts	\$3,343.5	\$3,349.1	\$3,354.7	\$3,360.3	\$3,365.9
Net Revenue Requirement from Rates	\$43,630.2	\$47,266.9	\$50,732.2	\$53,945.0	\$56,821.6
Utility Method of Revenue Requirement Calculation					
Metric	2012	2013	2014	2015	2016
Operations and Maintenance Expenditures	27,586.6	27,792.1	28,821.4	29,872.2	30,941.1
Depreciation Expense	9,647.3	9,980.2	10,324.5	10,680.8	11,049.3
Rate of Return on Rate Base	<u>6,396.2</u>	<u>9,494.6</u>	<u>11,586.2</u>	<u>13,392.1</u>	<u>14,831.2</u>
Total Revenue Requirement from Rates	\$43,630.2	\$47,266.9	\$50,732.2	\$53,945.0	\$56,821.6
Average Net Book Value of Water Utility Assets	\$440,306.4	\$455,498.3	\$471,214.4	\$487,472.7	\$504,292.0
Implied Required Rate of Return on Water Utility Assets	1.45%	2.08%	2.46%	2.75%	2.94%

Section 8: Sewer Utility Cost of Service Study

After forecasting the sewer utility 2012 revenue requirement for rates as shown in Table 7-15, a cost of service study is conducted to determine the amount of revenue that must be recovered from each customer class based upon their forecast 2012 sewage discharge characteristics. To accomplish this objective, RFC engaged in the multi-step cost of service process described below. The cost of service procedures followed by RFC were based on industry standard methodologies as published by the Water Environment Federation in the *"Manual of Practice No. 27, Financing and Charges for Wastewater Systems."*

8.1 Allocation of the O&M Revenue Requirement to Functional Activities

The first step in the cost allocation process involves assigning the 2012 O&M revenue requirement to the functional cost categories for which the expenditures will be incurred. For sewer utilities, these functional cost categories generally include: sewage treatment, sewer collection system maintenance, sewer administration, and if applicable, sewer customer service. The City did not develop the sewer utility's approved 2012 O&M budget on a functional basis. However, the City's financial accounting system does assign O&M expenditures to functional cost centers after they are incurred. Therefore, in order to assign the approved 2012 O&M revenue requirement to the appropriate functional categories for the cost of service study, RFC analyzed historical sewer utility O&M expenditure patterns and consulted with sewer utility divisional managers regarding their best estimate of functionalized 2012 O&M expenditures. The results of this process are shown in Table 8-1.

8.2 Classification of the O&M Revenue Requirement to Cost Components

Once the appropriate functional cost assignments have been made, the costs included in the 2012 O&M requirement must be classified to specific cost components based on the engineering design and/or operational purpose for which expenditures are, or will be, incurred. For the sewer utility cost of service study, RFC utilized the "functional cost" method of cost classification as discussed in Chapter 6 of the Water Environment Federation's *"Manual of Practice No. 27, Financing and Charges for Wastewater Systems."*

Under the functional cost method, costs are classified to one of the following general cost components: 1) wastewater discharge volumes; 2) the wastewater extra strength loadings Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS) , and, 3) customer related costs. Table 8-2 illustrates the classification of the water utility O&M revenue requirement to the specific cost components.

Table 8-1
Forecast of 2012 Sewer Utility O&M Expenditures by Functional Cost Center

Division	Functional Cost Center Description	Expense Description	Amount
Administration	Sewer Administration	City Administrative Charges	\$317,290
Administration	Sewer Administration	Bad Debt Expense	\$250,000
Administration	Sewer Administration	Reimbursement to Water	\$851,634
Administration	Sewer Administration	Reimbursement to Water	\$108,544
Administration	Sewer Administration	Contributions to Other Funds	\$1,900,110
Administration	Sewer Administration	Reimbursement to Other Departments	\$927,468
Administration	Sewer Administration	Contingency	\$250,000
Administration	Sewer Administration	Franchise Tax	\$2,147,684
Administration	Sewer Administration	All Other Expenditures	<u>\$865,842</u>
			\$7,618,572
Collection System	Sewer Collection System	All Expenditures	<u>\$7,192,851</u>
			\$7,192,851
Treatment	Sewer Treatment Plant Administration	All Expenditures	\$1,567,038
Treatment	Lift Station Operations	Electricity and Natural Gas	\$217,457
Treatment	Lift Station Operations	Chemicals	\$330,091
Treatment	Lift Station Operations	All Other Expenditures	\$409,587
Treatment	Sewer Treatment Plant Operations	Electricity and Natural Gas	\$3,073,105
Treatment	Sewer Treatment Plant Operations	Chemicals	\$281,952
Treatment	Sewer Treatment Plant Operations	All Other Expenditures	\$1,440,863
Treatment	Sewer Treatment Plant Equipment Maintenance	All Expenditures	\$2,122,563
Treatment	Sewer Treatment Plant Electrical Maintenance	All Expenditures	\$894,729
Treatment	Sewer Treatment Plant Maintenance	All Expenditures	\$133,519
Treatment	Sludge Dewatering Facility Operations	Chemicals	\$356,630
Treatment	Sludge Dewatering Facility Operations	All Other Expenditures	\$249,074
Treatment	Biosolids Field Application	All Expenditures	\$747,033
Treatment	Biosolids Handling	All Expenditures	\$85,760
Treatment	S&I Lab - Industrial Pretreatment	All Expenditures	\$43,208
Treatment	S&I Lab - Sewer	All Expenditures	\$26,514
Treatment	Plant Analysis	All Expenditures	\$460,080
Treatment	Industrial Analysis	All Expenditures	\$10,805
Treatment	Water Quality Analysis	All Expenditures	\$4,836
Treatment	Pretreatment Operations	All Expenditures	\$295,290
Treatment	Pretreatment Sampling	All Expenditures	<u>\$25,082</u>
			\$12,775,217
		Total Forecast 2012 Sewer Utility O&M Expenditures	\$27,586,640

Table 8-2
Functional Classification of the 2012 Sewer Utility O&M Revenue Requirement (\$ Thousands)

Functional Cost Center	Expense	Total	Common to All Customers (Retail and Wholesale)					Common to Retail Customers		
			Volume	BOD	TSS	Customer Meters	Customer Billing	Volume	BOD	TSS
Treatment Plant Administration	All Expenditures	1,567.0	783.5	391.8	391.8	0.0	0.0	0.0	0.0	0.0
Lift Station Operations	Electricity & Natural Gas	217.5	217.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lift Station Operations	Chemicals	330.1	330.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lift Station Operations	All Other Expenditures	409.6	409.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Treatment Plant Operations	Electricity & Natural Gas	3,073.1	1,536.6	768.3	768.3	0.0	0.0	0.0	0.0	0.0
Treatment Plant Operations	Chemicals	282.0	141.0	70.5	70.5	0.0	0.0	0.0	0.0	0.0
Treatment Plant Operations	All Other Expenditures	1,440.9	720.4	360.2	360.2	0.0	0.0	0.0	0.0	0.0
Treatment Plant Equip. Maintenance	All Expenditures	2,122.6	1,061.3	530.6	530.6	0.0	0.0	0.0	0.0	0.0
Treatment Plant Electrical Maintenance	All Expenditures	894.7	447.4	223.7	223.7	0.0	0.0	0.0	0.0	0.0
Treatment Plant Maintenance	All Expenditures	133.5	0.0	75.6	57.9	0.0	0.0	0.0	0.0	0.0
Sludge Dewatering Facility Operations	Chemicals	356.6	0.0	202.0	154.6	0.0	0.0	0.0	0.0	0.0
Sludge Dewatering Facility Operations	All Other Expenditures	249.1	0.0	141.1	108.0	0.0	0.0	0.0	0.0	0.0
Biosolids Field Application	All Expenditures	747.0	0.0	423.2	323.8	0.0	0.0	0.0	0.0	0.0
Biosolids Handling	All Expenditures	85.8	0.0	48.6	37.2	0.0	0.0	0.0	0.0	0.0
S&I Lab - Industrial Pretreatment	All Expenditures	43.2	0.0	24.5	18.7	0.0	0.0	0.0	0.0	0.0
S&I Lab - Sewer	All Expenditures	26.5	0.0	15.0	11.5	0.0	0.0	0.0	0.0	0.0
Plant Analysis	All Expenditures	460.1	0.0	260.6	199.4	0.0	0.0	0.0	0.0	0.0
Industrial Analysis	All Expenditures	10.8	0.0	6.1	4.7	0.0	0.0	0.0	0.0	0.0
Water Quality Analysis	All Expenditures	4.8	0.0	2.7	2.1	0.0	0.0	0.0	0.0	0.0
Pretreatment Operations	All Expenditures	295.3	0.0	167.3	128.0	0.0	0.0	0.0	0.0	0.0
Pretreatment Sampling	All Expenditures	<u>25.1</u>	<u>0.0</u>	<u>14.2</u>	<u>10.9</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
		\$12,775.2	\$5,647.3	\$3,726.1	\$3,401.9	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Sewer Collection System	All Expenditures	<u>7,192.9</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>1,294.7</u>	<u>0.0</u>	<u>5,898.1</u>	<u>0.0</u>	<u>0.0</u>
		\$7,192.9	\$0.0	\$0.0	\$0.0	\$1,294.7	\$0.0	\$5,898.1	\$0.0	\$0.0
Sewer Administration	City Admin. Charges	317.3	0.0	0.0	0.0	0.0	317.3	0.0	0.0	0.0
Sewer Administration	Bad Debt Expense	250.0	0.0	0.0	0.0	0.0	250.0	0.0	0.0	0.0
Sewer Administration	Reimbursement to Water	851.6	0.0	0.0	0.0	0.0	851.6	0.0	0.0	0.0
Sewer Administration	Reimbursement to Water	108.5	0.0	0.0	0.0	0.0	108.5	0.0	0.0	0.0
Sewer Administration	Contributions to Other Funds	1,900.1	0.0	0.0	0.0	1,900.1	0.0	0.0	0.0	0.0
Sewer Administration	Reim. Other Departments.	927.5	0.0	0.0	0.0	0.0	927.5	0.0	0.0	0.0
Sewer Administration	Contingency	250.0	0.0	0.0	0.0	0.0	250.0	0.0	0.0	0.0
Sewer Administration	Franchise Tax	2,147.7	0.0	0.0	0.0	2,147.7	0.0	0.0	0.0	0.0
Sewer Administration	All Other Expenditures	<u>865.8</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>865.8</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
		\$7,618.6	\$0.0	\$0.0	\$0.0	\$4,047.8	\$3,570.8	\$0.0	\$0.0	\$0.0
Total Sewer Utility O&M Expenses		\$27,586.6	\$5,647.3	\$3,726.1	\$3,401.9	\$5,342.5	\$3,570.8	\$5,898.1	\$0.0	\$0.0

8.3 Allocation of the Sewer Utility Assets to Functional Activities

The next step in the cost of service process is the allocation of forecast 2012 depreciation expense revenue requirement to functional cost categories. To achieve this objective, RFC first developed a forecast of 2012 sewer utility fixed assets, by functional category, as shown in Table 8-3. This forecast was developed based on an analysis of sewer utility property accounting records on December 31, 2010, sewer utility construction work in progress at December 31, 2010, and forecast CIP expenditures during 2011 and 2012.

Asset Function	Asset Type	Net Book Value at 12/31/10	Net Book Value at 12/31/11	Net Book Value at 12/31/12
Sewer Administration	General Equipment	\$50,460	\$1,983	\$106
		\$50,460	\$1,983	\$106
Sewer Lift Stations	General Equipment	\$317,078	\$277,823	\$240,274
Sewer Lift Stations	Structures and Improvements	\$4,109,344	\$4,173,271	\$4,295,731
Sewer Lift Stations	Sewer Mains	\$1,810,154	\$1,844,490	\$1,904,889
Sewer Lift Stations	Pumping Equipment	\$1,281,783	\$1,275,262	\$1,284,601
Sewer Lift Stations	In-Station Pipes, Meters and Pumping	\$155,256	\$144,131	\$134,180
Sewer Lift Stations	Odor Control	\$62,454	\$53,346	\$44,418
		\$7,736,069	\$7,768,323	\$7,904,093
Sewer Collection System	Land	\$1,848,212	\$1,920,849	\$2,023,898
Sewer Collection System	Structures and Improvements	\$1,638,407	\$1,658,860	\$1,701,889
Sewer Collection System	General Equipment	\$1,922,057	\$1,581,456	\$1,244,669
Sewer Collection System	Intangibles	\$1,536,842	\$1,494,498	\$1,468,920
Sewer Collection System	Meters	\$5,559	\$4,601	\$3,652
Sewer Collection System	Sewer Mains - Laterals	\$46,819,268	\$48,085,178	\$50,063,326
Sewer Collection System	Sewer Mains - Submains	\$1,998,546	\$2,032,519	\$2,095,831
Sewer Collection System	Sewer Mains	\$198,587,993	\$203,789,778	\$212,004,857
Sewer Collection System	Sewer Mains - Interceptors	\$12,667,980	\$12,968,408	\$13,459,313
Sewer Collection System	Sewer Mains - Manholes	\$1,772,328	\$1,819,699	\$1,893,981
Sewer Collection System	Sewer Mains - Pumping Equipment	\$422,998	\$426,572	\$435,882
		\$269,220,192	\$275,782,418	\$286,396,220
Sewage Treatment	Land	\$2,207,916	\$2,808,835	\$2,959,522
Sewage Treatment	Structures and Improvements	\$64,933,245	\$89,270,355	\$91,603,992
Sewage Treatment	General Equipment	\$1,555,667	\$2,589,120	\$2,066,453
Sewage Treatment	Intangibles	\$133,526	\$269,033	\$249,761
Sewage Treatment	Sewer Mains	\$3,805,802	\$4,840,162	\$5,046,124
Sewage Treatment	In-Plant Pipes, Meters and Pumping	\$2,765,072	\$3,596,620	\$3,516,497
Sewage Treatment	Odor Control	\$1,088,288	\$1,530,880	\$1,459,236
Sewage Treatment	Preliminary Treatment	\$938,843	\$1,186,143	\$1,079,207
Sewage Treatment	Primary Treatment	\$2,550,388	\$3,298,871	\$3,289,683
Sewage Treatment	Secondary Treatment	\$5,325,055	\$7,095,295	\$7,202,549
Sewage Treatment	Disinfection	\$3,036,572	\$3,818,383	\$3,587,164
Sewage Treatment	Sludge Processing	\$883,142	\$1,460,594	\$1,053,381
		\$89,223,516	\$121,764,289	\$123,113,569
	Construction Work in Progress	\$51,962,300	\$28,786,329	\$29,095,429
	Total Sewer Assets	\$418,192,537	\$434,103,342	\$446,509,416

8.4 Classification of Sewer Utility Assets and the Depreciation Revenue Requirement to Cost Components

Once the appropriate functional cost assignments have been made, sewer fixed assets can be classified to specific functional cost components based on the engineering design and/or operational purpose for which they were constructed. Table 8-4 shows this classification which can also be used to classify the 2012 depreciation expense component of the sewer utility revenue requirement to specific functional cost components as shown in Table 8-5.

Table 8-4
Functional Classification of Forecast 2012 Sewer Utility Net Fixed Assets (\$ Thousands)

Functional Cost Center	Total	Common to All Customers (Retail and Wholesale)					Common to Retail Customers		
		Volume	BOD	TSS	Customer Meters	Customer Billing	Volume	BOD	TSS
Sewage Treatment									
Land	2,884.2	1,442.1	721.0	721.0	0.0	0.0	0.0	0.0	0.0
Structures and Improvements	90,437.2	45,218.6	22,609.3	22,609.3	0.0	0.0	0.0	0.0	0.0
General Equipment	2,327.8	1,163.9	581.9	581.9	0.0	0.0	0.0	0.0	0.0
Intangibles	259.4	129.7	64.8	64.8	0.0	0.0	0.0	0.0	0.0
Sewer Mains	4,943.1	4,943.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
In-Plant Pipes, Meters and Pumping	3,556.6	3,556.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Odor Control	1,495.1	0.0	846.9	648.1	0.0	0.0	0.0	0.0	0.0
Preliminary Treatment	1,132.7	0.0	0.0	1,132.7	0.0	0.0	0.0	0.0	0.0
Primary Treatment	3,294.3	0.0	0.0	3,294.3	0.0	0.0	0.0	0.0	0.0
Secondary Treatment	7,148.9	0.0	7,148.9	0.0	0.0	0.0	0.0	0.0	0.0
Disinfection	3,702.8	3,702.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sludge Processing	1,257.0	0.0	712.1	544.9	0.0	0.0	0.0	0.0	0.0
	\$122,438.9	\$60,156.7	\$32,685.1	\$29,597.1	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Sewer Lift Stations									
General Equipment	259.0	259.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Structures and Improvements	4,234.5	4,234.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sewer Mains	1,874.7	1,874.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pumping Equipment	1,279.9	1,279.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
In-Station Pipes, Meters and Pumping	139.2	139.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Odor Control	48.9	0.0	27.7	21.2	0.0	0.0	0.0	0.0	0.0
	\$7,836.2	\$7,787.3	\$27.7	\$21.2	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Sewer Collection System									
Land	1,972.4	0.0	0.0	0.0	0.0	0.0	0.0	1,972.4	0.0
Structures and Improvements	1,680.4	0.0	0.0	0.0	0.0	0.0	0.0	1,680.4	0.0
General Equipment	1,413.1	0.0	0.0	0.0	0.0	0.0	0.0	1,413.1	0.0
Intangibles	1,481.7	0.0	0.0	0.0	0.0	0.0	0.0	1,481.7	0.0
Meters	4.1	0.0	0.0	0.0	0.0	4.1	0.0	0.0	0.0
Sewer Mains - Laterals	49,074.3	0.0	0.0	0.0	0.0	49,074.3	0.0	0.0	0.0
Sewer Mains - Submains	2,064.2	0.0	0.0	0.0	0.0	0.0	0.0	2,064.2	0.0
Sewer Mains	207,897.3	0.0	0.0	0.0	0.0	0.0	0.0	207,897.3	0.0
Sewer Mains - Interceptors	13,213.9	0.0	0.0	0.0	0.0	0.0	0.0	13,213.9	0.0
Sewer Mains - Manholes	1,856.8	0.0	0.0	0.0	0.0	0.0	0.0	1,856.8	0.0
Sewer Mains - Pumping Equipment	431.2	0.0	0.0	0.0	0.0	0.0	0.0	431.2	0.0
	\$281,089.3	\$0.0	\$0.0	\$0.0	\$0.0	\$49,078.4	\$0.0	\$232,010.9	\$0.0
Sewer Administration									
General Equipment	\$1.0	\$0.0	\$0.0	\$0.0	\$0.0	\$1.0	\$0.0	\$0.0	\$0.0
Total Assets in Service	411,365.5	67,944.1	32,712.7	29,618.3	0.0	49,079.4	0.0	232,010.9	0.0
Construction Work in Progress	<u>\$28,940.9</u>	<u>\$4,780.1</u>	<u>\$2,301.4</u>	<u>\$2,083.7</u>	<u>\$0.0</u>	<u>\$3,452.9</u>	<u>\$0.0</u>	<u>\$16,322.7</u>	<u>\$0.0</u>
Total Sewer Utility Assets	\$440,306.4	\$72,724.2	\$35,014.2	\$31,702.1	\$0.0	\$52,532.3	\$0.0	\$248,333.7	\$0.0

Table 8-5
Functional Classification of the 2012 Sewer Utility Depreciation Revenue Requirement (\$ Thousands)

Functional Cost Center	Total	Common to All Customers (Retail and Wholesale)					Common to Retail Customers		
		Volume	BOD	TSS	Customer Meters	Customer Billing	Volume	BOD	TSS
Sewage Treatment									
Land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Structures and Improvements	2,455.5	1,227.8	613.9	613.9	0.0	0.0	0.0	0.0	0.0
General Equipment	661.6	330.8	165.4	165.4	0.0	0.0	0.0	0.0	0.0
Intangibles	33.7	16.9	8.4	8.4	0.0	0.0	0.0	0.0	0.0
Sewer Mains	53.7	53.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
In-Plant Pipes, Meters and Pumping	273.1	273.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Odor Control	153.8	0.0	87.1	66.7	0.0	0.0	0.0	0.0	0.0
Preliminary Treatment	170.6	0.0	0.0	170.6	0.0	0.0	0.0	0.0	0.0
Primary Treatment	186.2	0.0	0.0	186.2	0.0	0.0	0.0	0.0	0.0
Secondary Treatment	273.4	0.0	273.4	0.0	0.0	0.0	0.0	0.0	0.0
Disinfection	436.1	436.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sludge Processing	485.6	0.0	275.1	210.5	0.0	0.0	0.0	0.0	0.0
	\$5,183.1	\$2,338.2	\$1,423.3	\$1,421.6	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Sewer Lift Stations									
General Equipment	52.5	52.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Structures and Improvements	101.4	101.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sewer Mains	38.6	38.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pumping Equipment	59.1	59.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
In-Station Pipes, Meters and Pumping	17.7	17.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Odor Control	11.8	0.0	6.7	5.1	0.0	0.0	0.0	0.0	0.0
	\$281.0	\$269.2	\$6.7	\$5.1	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Sewer Collection System									
Land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Structures and Improvements	46.0	0.0	0.0	0.0	0.0	0.0	0.0	46.0	0.0
General Equipment	421.6	0.0	0.0	0.0	0.0	0.0	0.0	421.6	0.0
Intangibles	105.8	0.0	0.0	0.0	0.0	0.0	0.0	105.8	0.0
Meters	1.2	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0
Sewer Mains - Laterals	601.5	0.0	0.0	0.0	0.0	601.5	0.0	0.0	0.0
Sewer Mains - Submains	45.7	0.0	0.0	0.0	0.0	0.0	0.0	45.7	0.0
Sewer Mains	2,717.8	0.0	0.0	0.0	0.0	0.0	0.0	2,717.8	0.0
Sewer Mains - Interceptors	204.8	0.0	0.0	0.0	0.0	0.0	0.0	204.8	0.0
Sewer Mains - Manholes	23.3	0.0	0.0	0.0	0.0	0.0	0.0	23.3	0.0
Sewer Mains - Pumping Equipment	13.6	0.0	0.0	0.0	0.0	0.0	0.0	13.6	0.0
	\$4,181.3	\$0.0	\$0.0	\$0.0	\$0.0	\$602.7	\$0.0	\$3,578.6	\$0.0
Sewer Administration									
General Equipment	\$2.0	\$0.0	\$0.0	\$0.0	\$0.0	\$2.0	\$0.0	\$0.0	\$0.0
Total Sewer Depreciation	9,647.3	2,607.4	1,429.9	1,426.7	0.0	604.7	0.0	3,578.6	0.0

8.5 Estimation of 2012 Sewer Utility Units of Service

After the O&M and depreciation expense revenue requirement components have been classified to specific functional cost parameters, the units of service associated with each type of customer must be calculated. The first step in this process is to analyze the sewer influent volumes and strength loadings recorded by the sewer utility's water treatment facilities. This analysis, also known as a "plant balance" or "mass balance" analysis is shown in Table 8-6.

The indicated difference between billed sewer discharge volumes and wastewater influent shown in Table 8-6 is caused by infiltration and inflow. Infiltration and inflow occurs when surrounding ground water seeps into wastewater system piping. Because wastewater systems are not pressurized (unlike water systems), the process of infiltration and inflow impacts all wastewater systems. The reported wastewater influent strength of 288.57 mg/L for BOD and the 220.98 mg/L for TSS reflect the average measured influent loadings at all of the sewer utility's wastewater treatment plants during 2009 and 2010. Inflow and infiltration volumes were assumed to have a strength of 15.00 mg/L. Based on these inputs, the estimated strength of billed sewer discharges was calculated to be 325.81 mg/L for BOD and 248.80 mg/L for TSS. In reality, there may be significant difference between the strength loadings of billed sewer discharge volumes depending on the customer class in question.

After the wastewater volume and strength loadings have been estimated, they must be allocated to each sewer customer class to determine the customer class specific units of service. Of particular importance is allocation of infiltration and inflow volumes and their associated strength loadings to specific customer classes. For the sewer cost of service study, RFC aggregated each discrete sewer customer class into the categories of Inside City Retail, Outside City Retail, Flat Rate Sewer, and Wholesale Sewer. Table 8-7 shows a summary of the 2012 sewer utility units of service calculation. The meter flow equivalencies shown in Table 8-7 are based on AWWA meter flow equivalencies as adjusted to set 5/8", 3/4", and 1" meters to an equivalency of 1.0.

Table 8-6
Sewage Utility Treatment Plant Mass Balance Analysis

Type of Flow	2009 Estimated Actual Volume (Gallons)	2010 Estimated Actual Volume (Gallons)	2011 Forecast Volume (Gallons)	2012 Forecast Volume (Gallons)	Biochemical Oxygen Demand		Total Suspended Solids	
					mg/L	Pounds	mg/L	Pounds
Inside City								
Residential	5,549,192,664	5,625,973,499	5,619,664,669	5,638,230,258	325.85	15,332,473	248.89	11,710,880
Commercial / Industrial	3,853,778,565	4,051,735,072	3,982,186,204	3,995,500,842	325.85	10,865,272	248.89	8,298,851
Municipal / Institutional	465,929,817	281,238,203	282,364,658	283,491,113	325.85	770,919	248.89	588,825
Metered Sewer	1,279,614,407	1,034,932,729	1,034,932,729	1,034,932,729	325.85	2,814,372	248.89	2,149,606
Flat Rate Sewer	<u>116,389,263</u>	<u>116,389,263</u>	<u>116,389,263</u>	<u>116,389,263</u>	<u>325.85</u>	<u>316,506</u>	<u>248.89</u>	<u>241,746</u>
Total Inside City Billed Volumes	11,264,904,716	11,110,268,767	11,035,537,523	11,068,544,204	325.85	30,099,543	248.89	22,989,908
Outside City								
Residential	278,123,336	281,971,561	281,699,477	282,658,944	325.85	768,656	248.89	587,096
Commercial / Industrial	136,409,435	143,416,360	141,194,881	141,934,121	325.85	385,972	248.89	294,804
Municipal / Institutional	16,492,183	9,954,787	10,323,483	10,692,179	325.85	29,076	248.89	22,208
Metered Sewer	45,293,593	36,632,771	40,963,182	40,963,182	325.85	111,394	248.89	85,083
Flat Rate Sewer	<u>15,508,182</u>	<u>15,508,182</u>	<u>15,508,182</u>	<u>15,508,182</u>	<u>325.85</u>	<u>42,173</u>	<u>248.89</u>	<u>32,211</u>
Total Outside City Billed Volumes	491,826,729	487,483,660	489,689,205	491,756,608	325.85	1,337,272	248.89	1,021,403
Wholesale	44,202,667	60,911,000	52,556,833	52,556,833	325.85	142,922	248.89	109,163
Total System Billed Volumes	11,800,934,112	11,658,663,427	11,577,783,561	11,612,857,645	325.85	31,579,736	248.89	24,120,474
Implied Infiltration / Inflow	<u>1,677,152,888</u>	<u>1,501,026,573</u>	<u>1,568,495,532</u>	<u>1,573,247,179</u>	<u>15.00</u>	<u>196,941</u>	<u>15.00</u>	<u>196,941</u>
Total Treatment Plant Influent	13,478,087,000	13,159,690,000	13,146,279,093	13,186,104,824	288.77	31,776,677	220.98	24,317,414
% of Infiltration / Inflow	12.44%	11.41%	11.93%	11.93%				

Table 8-7 Forecast 2012 Sewer Utility Units of Service by Customer Class										
Allocation of Volume (Gallons)	Inside City Volumetric Customers		Inside City Flat Rate Customers		Outside City Volumetric Customers		Outside City Flat Rate Customers		Wholesale Customers	
Annual Billed Volume	10,952,154,941		116,389,263		476,248,426		15,508,182		52,556,833	
Allocation of I/I Based on Billed Volume	0		0		0		0		0	
Allocation of I/I Based on Customer Accounts	<u>1,481,161,641</u>		<u>17,049,265</u>		<u>70,895,893</u>		<u>2,276,126</u>		<u>1,864,255</u>	
Total Units of Service (Gallons)	12,433,316,582		133,438,528		547,144,319		17,784,307		54,421,089	
Allocation of Strength (Pounds)	Inside City Volumetric Customers		Inside City Flat Rate Customers		Outside City Volumetric Customers		Outside City Flat Rate Customers		Wholesale Customers	
	BOD	TSS	BOD	TSS	BOD	TSS	BOD	TSS	BOD	TSS
Allocation of Billed Volume Strength Loadings	29,783,036	22,748,162	316,506	241,746	1,295,099	989,191	42,173	32,211	142,922	109,163
Allocation of I/I Strength Loadings Based on Billed Volume	0	0	0	0	0	0	0	0	0	0
Allocation of I/I Strength Loadings Based on Customer Accounts	<u>185,413</u>	<u>185,413</u>	<u>2,134</u>	<u>2,134</u>	<u>8,875</u>	<u>8,875</u>	<u>285</u>	<u>285</u>	<u>233</u>	<u>233</u>
Total Units of Service (Pounds)	29,968,450	22,933,575	318,641	243,880	1,303,974	998,066	42,458	32,496	143,155	109,396
Allocation of Meters and Bills	Inside City Volumetric Customers		Inside City Flat Rate Customers		Outside City Volumetric Customers		Outside City Flat Rate Customers		Wholesale Customers	
Bills	1,549,224		18,876		75,660		2,520		24	
Equivalent Meters	136,655		1,573		6,541		210		172	

8.6 Calculation of the Forecast 2012 Sewer Utility Unit Costs of Service

The next step in the process of forecasting the 2012 sewer utility revenue requirement for each customer class is to calculate the unit cost of service for each functional component. This process allocates the O&M, depreciation expense, and return on invested capital components of the 2012 revenue requirement between inside city and outside city customers. To allocate the return on invested capital component of the revenue requirement, RFC estimated that outside city customers should pay a 6.88% rate of return on the capital invested by inside city customers to construct outside city rate base assets. This contrasts with the 7.50% outside city rate of return used in the COSA that was completed in 2008. The derivation of the 6.88% outside city rate of return is shown below in Table 8-8.

Table 8-8 Estimation of the 2012 Water and Sewer Utility Outside City Rate of Return on Rate Base				
Combined Water and Sewer Utility Capital Structure Components	Amount	% of Total	Cost of Capital (Notes 1 & 2)	Weighted Avg. Cost of Capital
Equity Portion = Total Net Assets	\$609,589,485	56.34%	8.07%	4.55%
Debt Portion = Current Portion of LTD + Outstanding Rev. Bonds	<u>\$472,485,195</u>	<u>43.66%</u>	5.35%	<u>2.34%</u>
Total Theoretical Capital Structure	\$1,082,074,680	100.00%		6.8823%
Note 1: The 5.35% "Cost of Debt" input based on the 2010B Series Water and Sewer Revenue Bonds which feature interest rates between 3.00% and 5.35%.				
Note 2: The 8.07% "Cost of Equity" input based on the 5/31/11 Bond Buyer Index return on revenue bonds of 5.38% multiplied by a factor of 1.5				

Table 8-9 shows the calculation of the forecast 2012 inside and outside city unit cost of service. As shown in Table 8-9, the use of a 6.88% outside city rate of return results in outside city customers providing \$1.36 million of the \$6.4 million return on invested capital revenue requirement. The remaining \$5.04 million is provided by inside city customers which equates to a 1.20% return on the inside city rate base. The overall blended sewer utility total system return on invested capital is 1.45%

8.7 Forecast 2012 Sewer Utility Revenue Requirement by Customer Class

Once the 2012 inside and outside city unit cost of service has been estimated, the 2012 sewer utility revenue requirement for each customer class can be forecast. This process is shown in Table 8-10 and is accomplished by multiplying the unit costs of service derived in Table 8-9, by the unique units of service for each customer class. The revenue requirement for each customer class is based on their unique class-specific consumption characteristics and reflects the amount of revenue that must be recovered through the utility rates paid by the customers in each class. By determining a revenue requirement for each customer class in this manner, the maximum possible rate equity can be achieved between customer classes.

Table 8-11 summarizes the forecast sewer revenue requirement for each customer class. As shown in Table 8-11, the overall 2012 percentage increase in sewer rate revenues is 9.0%. This corresponds to the overall 9.0% rate revenue increase specified in the sewer utility financial plan (Table 7-14).

Table 8-9 2012 Sewer Utility Unit Cost of Service									
Functional Cost Center	Total	Common to All Customers (Retail and Wholesale)					Common to Retail Customers		
		Volume	BOD	TSS	Customer Meters	Customer Billing	Volume	BOD	TSS
Units of Service									
Inside City - Total									
Direct Billed Volume		11,068,544,204	30,099,543	22,989,908			11,068,544,204	30,099,543	22,989,908
Infiltration / Inflow Allocated on Volume		0	0	0			0	0	0
Infiltration / Inflow Allocated on Accounts		<u>1,498,210,905</u>	<u>187,548</u>	<u>187,548</u>	-	-	<u>1,498,210,905</u>	<u>187,548</u>	<u>187,548</u>
Total Inside City - Total		12,566,755,109	30,287,090	23,177,456	136,655	1,549,224	12,566,755,109	30,287,090	23,177,456
Outside City - Total									
Direct Billed Volume		544,313,441	1,480,193	1,130,566			491,756,608	1,337,272	1,021,403
Infiltration / Inflow Allocated on Volume		0	0	0	-	-	0	0	0
Infiltration / Inflow Allocated on Accounts		<u>75,036,274</u>	<u>9,393</u>	<u>9,393</u>	-	-	<u>73,172,019</u>	<u>9,160</u>	<u>9,160</u>
Total Outside City - Total		619,349,715	1,489,586	1,139,959	6,713	75,684	564,928,626	1,346,431	1,030,562
Total Sewer Utility		13,186,104,824	31,776,677	24,317,414	143,368	1,624,908	13,131,683,736	31,633,522	24,208,018
Cost of Service Components									
Return on Net Fixed Assets									
Total Sewer Utility- Fixed Asset Unit Cost									
Net Fixed Assets	\$440,306,379	\$72,724,151	\$35,014,196	\$31,702,062	\$52,532,318	\$0	\$248,333,651	\$0	\$0
Total Sewer Utility Units		<u>13,186,104,824</u>	<u>31,776,677</u>	<u>24,317,414</u>	<u>143,368</u>	<u>1,624,908</u>	<u>13,131,683,736</u>	<u>31,633,522</u>	<u>24,208,018</u>
Total Sewer Utility Unit Cost - \$/Unit		\$0.005515	\$1.101884	\$1.303677	\$366.415925	\$0.000000	\$0.018911	\$0.000000	\$0.000000
Inside City - Return on Fixed Assets									
Inside City Net Fixed Assets - Direct Volume		\$61,045,357	\$33,166,190	\$29,971,422			\$209,317,560	\$0	\$0
Inside City Net Fixed Assets - I/I Allocated on Volume		\$0	\$0	\$0			\$0	\$0	\$0
Inside City Net Fixed Assets - I/I Allocated on Accounts		<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$8,714,107</u>	-	<u>\$28,332,710</u>	<u>\$0</u>	<u>\$0</u>
Inside City Inside City Net Fixed Assets - Total	\$420,619,914	\$61,045,357	\$33,166,190	\$29,971,422	\$58,786,675	\$0	\$237,650,270	\$0	\$0
Inside City % Rate of Return on Net Fixed Assets	1.20%								
Inside City \$ Return on Net Fixed Assets	\$5,041,306	<u>\$731,654</u>	<u>\$397,511</u>	<u>\$359,220</u>	<u>\$704,583</u>	<u>\$0</u>	<u>\$2,848,338</u>	<u>\$0</u>	<u>\$0</u>
Inside City Unit Cost - \$ per Unit		\$0.000058	\$0.013125	\$0.015499	\$5.155925	\$0.000000	\$0.000227	\$0.000000	\$0.000000
Outside City - Return on Fixed Assets									
Outside City Net Fixed Assets - Direct Volume		\$3,002,003	\$1,631,001	\$1,473,893			\$9,299,623	\$0	\$0
Outside City Net Fixed Assets - I/I Allocated on Volume		\$0	\$0	\$0			\$0	\$0	\$0
Outside City Net Fixed Assets - I/I Allocated on Accounts		<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$436,437</u>	-	<u>\$1,383,758</u>	<u>\$0</u>	<u>\$0</u>
Outside City Outside City Net Fixed Assets - Total	\$19,686,465	\$3,002,003	\$1,631,001	\$1,473,893	\$2,896,187	\$0	\$10,683,382	\$0	\$0
Outside City % Rate of Return on Net Fixed Assets	6.88%								
Outside City \$ Return on Net Fixed Assets	\$1,354,885	<u>\$206,607</u>	<u>\$112,251</u>	<u>\$101,438</u>	<u>\$199,325</u>	<u>\$0</u>	<u>\$735,264</u>	<u>\$0</u>	<u>\$0</u>
Outside City Unit Cost - \$ per Unit		\$0.000334	\$0.075357	\$0.088984	\$29.692359	\$0.000000	\$0.001302	\$0.000000	\$0.000000
Total Sewer Utility \$ Return on Net Fixed Assets	\$6,396,191	\$938,262	\$509,761	\$460,658	\$903,908	\$0	\$3,583,602	\$0	\$0
Total Sewer Utility ROR on Net Fixed Assets	1.45%								

Table 8-9 - Continued 2012 Sewer Utility Unit Cost of Service									
Functional Cost Center	Total	Common to All Customers (Retail and Wholesale)					Common to Retail Customers		
		Volume	BOD	TSS	Customer Meters	Customer Billing	Volume	BOD	TSS
O&M Expense									
Total System O&M Expense	\$27,586,640	\$5,647,261	\$3,726,067	\$3,401,889	\$5,342,507	\$3,570,778	\$5,898,138	\$0	\$0
Total System Units		<u>13,186,104.824</u>	<u>31,776.677</u>	<u>24,317.414</u>	<u>143,368</u>	<u>1,624,908</u>	<u>13,131,683.736</u>	<u>31,633.522</u>	<u>24,208.018</u>
Total System Unit Cost - \$ per Unit		\$0.000428	\$0.117258	\$0.139895	\$37.264293	\$2.197526	\$0.000449	\$0.000000	\$0.000000
Inside City O&M Expense - Direct Volume		\$4,740,366	\$3,529,409	\$3,216,178			\$4,971,472	\$0	\$0
Inside City O&M Expense - I/I Allocated on Volume		\$0	\$0	\$0			\$0	\$0	\$0
Inside City O&M Expense - I/I Allocated on Accounts		<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$689.873</u>	-	<u>\$672.926</u>	<u>\$0</u>	<u>\$0</u>
Inside City O&M Expense	\$26,317,036	<u>\$4,740,366</u>	<u>\$3,529,409</u>	<u>\$3,216,178</u>	<u>\$5,782,225</u>	<u>\$3,404,460</u>	<u>\$5,644,398</u>	<u>\$0</u>	<u>\$0</u>
Inside City Unit Cost of Service - \$ per Unit		\$0.000377	\$0.116532	\$0.138763	\$42.312573	\$2.197526	\$0.000449	\$0.000000	\$0.000000
Outside City O&M Expense - Direct Volume		\$233,115	\$173,564	\$158,161			\$220,874	\$0	\$0
Outside City O&M Expense - I/I Allocated on Volume		\$0	\$0	\$0			\$0	\$0	\$0
Outside City O&M Expense - I/I Allocated on Accounts		\$0	\$0	\$0	\$34,552		\$32,865	\$0	\$0
Outside City O&M Expense	\$1,269,604	<u>\$233,115</u>	<u>\$173,564</u>	<u>\$158,161</u>	<u>\$284,707</u>	<u>\$166,318</u>	<u>\$253,740</u>	<u>\$0</u>	<u>\$0</u>
Outside City Unit Cost of Service - \$ per Unit		\$0.000376	\$0.116518	\$0.138742	\$42.411251	\$2.197526	\$0.000449	\$0.000000	\$0.000000
Depreciation Expense									
Total System Depreciation Expense	\$9,647,322	\$2,607,420	\$1,429,946	\$1,426,702	\$604,686	\$0	\$3,578,567	\$0	\$0
Total System Units		<u>13,186,104.824</u>	<u>31,776.677</u>	<u>24,317.414</u>	<u>143,368</u>	<u>1,624,908</u>	<u>13,131,683.736</u>	<u>31,633.522</u>	<u>24,208.018</u>
Total System Unit Cost - \$ per Unit		\$0.000198	\$0.045000	\$0.058670	\$4.217722	\$0.000000	\$0.000273	\$0.000000	\$0.000000
Inside City Depreciation Expense - Direct Volume		\$2,188,694	\$1,354,475	\$1,348,817			\$3,016,333	\$0	\$0
Inside City Depreciation Expense - I/I Allocated on Volume		\$0	\$0	\$0			\$0	\$0	\$0
Inside City Depreciation Expense - I/I Allocated on Accounts		\$0	\$0	\$0	\$315,699		\$408,283	\$0	\$0
Inside City Depreciation Expense	\$9,208,675	<u>\$2,188,694</u>	<u>\$1,354,475</u>	<u>\$1,348,817</u>	<u>\$892,072</u>	<u>\$0</u>	<u>\$3,424,616</u>	<u>\$0</u>	<u>\$0</u>
Inside City Unit Cost of Service - \$ per Unit		\$0.000174	\$0.044721	\$0.058195	\$6.527914	\$0.000000	\$0.000273	\$0.000000	\$0.000000
Outside City Depreciation Expense - Direct Volume		\$107,633	\$66,608	\$66,330			\$134,011	\$0	\$0
Outside City Depreciation Expense - I/I Allocated on Volume		\$0	\$0	\$0			\$0	\$0	\$0
Outside City Depreciation Expense - I/I Allocated on Accounts		\$0	\$0	\$0	\$15,811		\$19,940	\$0	\$0
Outside City Depreciation Expense	\$438,647	<u>\$107,633</u>	<u>\$66,608</u>	<u>\$66,330</u>	<u>\$44,125</u>	<u>\$0</u>	<u>\$153,951</u>	<u>\$0</u>	<u>\$0</u>
Outside City Unit Cost of Service - \$ per Unit		\$0.000174	\$0.044716	\$0.058187	\$6.573071	\$0.000000	\$0.000273	\$0.000000	\$0.000000
Total System Cost of Service	\$43,630,153	\$8,208,069	\$5,633,818	\$5,250,144	\$7,907,036	\$3,570,778	\$13,060,307	\$0	\$0
Total Unit Cost of Service									
Inside City Cost of Service - \$/Unit		\$0.000610	\$0.174378	\$0.212457	\$53.996412	\$2.197526	\$0.000948	\$0.000000	\$0.000000
Outside City Cost of Service - \$/Unit		\$0.000884	\$0.236592	\$0.285913	\$78.676681	\$2.197526	\$0.002023	\$0.000000	\$0.000000
Total Cost of Service									
Inside City	\$40,567,017	\$7,660,714	\$5,281,395	\$4,924,215	\$7,378,880	\$3,404,460	\$11,917,353	\$0	\$0
Outside City	\$3,063,137	\$547,355	\$352,424	\$325,929	\$528,157	\$166,318	\$1,142,955	\$0	\$0
Total Sewer Utility Cost of Service	\$43,630,153	\$8,208,069	\$5,633,818	\$5,250,144	\$7,907,036	\$3,570,778	\$13,060,307	\$0	\$0

Table 8-10
Forecast 2012 Sewer Utility Revenue Requirement by Customer Class

Customer Class	Total Revenue Requirement	Volume (Gallons)	BOD (Pounds)	TSS (Pounds)	Meters & Services	Customer Billings & Collection	Volume (Gallons)	BOD (Pounds)	TSS (Pounds)
Total Sewer Utility Unit Cost of Service									
Inside City Cost of Service - \$ / Unit	----	\$0.000610	\$0.174378	\$0.212457	\$53.996412	\$2.197526	\$0.000948	\$0.000000	\$0.000000
Outside City Cost of Service - \$ / Unit	----	\$0.000884	\$0.236592	\$0.285913	\$78.676681	\$2.197526	\$0.002023	\$0.000000	\$0.000000
Customer Class Revenue Requirement Calculation									
Inside City - Volumetric									
Units of Service	----	12,433,316,582	29,968,450	22,933,575	136,655	1,549,224	12,433,316,582	29,968,450	22,933,575
Revenue Req. (Units of Service X \$/Unit)	\$40,251,751	\$7,579,369	\$5,225,831	\$4,872,401	\$7,378,880	\$3,404,460	\$11,790,810	\$0	\$0
Inside City - Flat Rate									
Units of Service	----	133,438,528	318,641	243,880	0	0	133,438,528	318,641	243,880
Revenue Req. (Units of Service X \$/Unit)	\$315,265	\$81,344	\$55,564	\$51,814	\$0	\$0	\$126,543	\$0	\$0
Outside City Volumetric									
Units of Service	----	547,144,319	1,303,974	998,066	6,541	75,660	547,144,319	1,303,974	998,066
Revenue Req. (Units of Service X \$/Unit)	\$2,865,275	\$483,543	\$308,509	\$285,360	\$514,624	\$166,265	\$1,106,974	\$0	\$0
Outside City Flat Rate									
Units of Service	----	17,784,307	42,458	32,496	0	0	17,784,307	42,458	32,496
Revenue Req. (Units of Service X \$/Unit)	\$71,034	\$15,717	\$10,045	\$9,291	\$0	\$0	\$35,981	\$0	\$0
Wholesale									
Units of Service	----	54,421,089	143,155	109,396	172	24	0	0	0
Revenue Req. (Units of Service X \$/Unit)	\$126,827	\$48,095	\$33,869	\$31,278	\$13,532	\$53	\$0	\$0	\$0
Total System Revenue Requirement	\$43,630,153	\$8,208,069	\$5,633,818	\$5,250,144	\$7,907,036	\$3,570,778	\$13,060,307	\$0	\$0

Table 8-11
Summary Forecast of the 2012 Sewer Utility Revenue Requirement by Customer Class

Customer Class	2012 Volumetric	2012 BOD Rev. Req.	2012 TSS Rev. Req.	2012 Meter Rev. Req.	2012 Billing Rev. Req.	2012 Total Rev. Req.	2012 Revenue @ Existing 2011 Rates	Dollar Change	% Change
Inside City Volumetric	\$19,370,179	\$5,225,831	\$4,872,401	\$7,378,880	\$3,404,460	\$40,251,751	\$36,778,515	\$3,473,237	9.44%
Inside City Flat Rate	\$207,887	\$55,564	\$51,814	\$0	\$0	\$315,265	\$421,690	(\$106,425)	-25.24%
Outside City Volumetric	\$1,590,517	\$308,509	\$285,360	\$514,624	\$166,265	\$2,865,275	\$2,633,416	\$231,859	8.80%
Outside Flat Rate	\$51,698	\$10,045	\$9,291	\$0	\$0	\$71,034	\$90,090	(\$19,056)	-21.15%
Wholesale	<u>\$48,095</u>	<u>\$33,869</u>	<u>\$31,278</u>	<u>\$13,532</u>	<u>\$53</u>	<u>\$126,827</u>	<u>\$103,953</u>	<u>\$22,874</u>	22.00%
Total	\$21,268,376	\$5,633,818	\$5,250,144	\$7,907,036	\$3,570,778	\$43,630,153	\$40,027,663	\$3,602,490	9.00%
			\$32,152,339		\$11,477,814				

Section 9: Sewer Utility Rate Design

9.1 Monthly Fixed Charge Calculation

The first step in developing sewer monthly fixed charges is to calculate the monthly capacity and billing and collection components of the fixed charge. Table 9-1 shows this calculation which is based on AWWA meter flow rate equivalencies, as adjusted to set all 5/8", 3/4" and 1" meters to an equivalency of 1.0.

Table 9-1 Capacity and Billing & Collection Components of the 2012 Sewer Monthly Fixed Charge Rate Design							
Class	2012 Revenue Requirement	2012 Units of Service	Units	2012 Annual Fixed Charge	2012 Monthly Fixed Charge	2011 Monthly Fixed Charge	% Change
Inside City							
Meters & Services	7,378,880	136,655	Equivalent Meters	54.00	4.50		
Billing & Collection	<u>3,404,460</u>	1,549,224	Annual Bills	<u>2.20</u>	<u>2.20</u>		
	\$10,783,340			\$56.19	\$6.70	\$5.13	30.55%
Outside City							
Meters & Services	528,157	6,713	Equivalent Meters	78.68	6.56		
Billing & Collection	<u>166,318</u>	75,684	Annual Bills	<u>2.20</u>	<u>2.20</u>		
	\$694,474			\$80.87	\$8.75	\$8.20	6.76%
Total	\$11,477,814	143,368	Equivalent Meters				
		1,624,908	Annual Bills				

RFC's original rate design for 2012 monthly fixed resulted in highly variable percentage increases and decreases over a range of customer meter sizes. Table 9-2 shows this original monthly fixed charge rate design.

Table 9-2 Original Calculation of the 2012 Sewer Monthly Fixed Charge Rate Design							
Meter Size	Billing Component	AWWA Meter Flow Equiv. as Adjusted	Capacity Component	Calculated 2012 Monthly Fixed Charge	Existing 2011 Monthly Fixed Charge	% Increase	\$ Increase
Inside City - Fixed Charge							
5/8"	\$2.20	1.00	\$4.50	\$6.70	\$5.13	30.60%	\$1.57
3/4"	\$2.20	1.00	\$4.50	\$6.70	\$5.61	19.43%	\$1.09
1"	\$2.20	1.00	\$4.50	\$6.70	\$7.11	-5.77%	(\$0.41)
1-1/2"	\$2.20	2.00	\$9.00	\$11.20	\$9.22	21.48%	\$1.98
2"	\$2.20	3.20	\$14.40	\$16.60	\$14.81	12.09%	\$1.79
3"	\$2.20	7.00	\$31.50	\$33.70	\$56.20	-40.04%	(\$22.50)
4"	\$2.20	12.00	\$54.00	\$56.20	\$71.48	-21.38%	(\$15.28)
6"	\$2.20	25.00	\$112.49	\$114.70	\$107.26	6.94%	\$7.44
8"	\$2.20	36.00	\$161.99	\$164.19	\$148.09	10.87%	\$16.10
10"	\$2.20	58.00	\$260.98	\$263.19	\$173.65	51.56%	\$89.54
12"	\$2.20	86.00	\$386.97	\$389.18	\$229.83	69.33%	\$159.35
Outside City - Fixed Charge							
5/8"	----	----	----	\$10.72	\$8.20	30.73%	\$2.52
3/4"	----	----	----	\$10.72	\$8.98	19.38%	\$1.74
1"	----	----	----	\$10.72	\$11.38	-5.80%	(\$0.66)
1-1/2"	----	----	----	\$17.92	\$14.76	21.41%	\$3.16
2"	----	----	----	\$26.56	\$23.69	12.11%	\$2.87
3"	----	----	----	\$53.92	\$89.91	-40.03%	(\$35.99)
4"	----	----	----	\$89.92	\$114.36	-21.37%	(\$24.44)
6"	----	----	----	\$183.52	\$171.62	6.93%	\$11.90
8"	----	----	----	\$262.71	\$236.95	10.87%	\$25.76
10"	----	----	----	\$421.11	\$277.84	51.57%	\$143.27
12"	----	----	----	\$622.69	\$367.73	69.33%	\$254.96

9.2 Proposed 2012 Monthly Fixed Charge Calculation

To mitigate highly variable outcome of the original sewer monthly fixed charge rate design shown Table 9-3, RFC chose to phase-in use of AWWA meter flow rate equivalencies over a three-year period. The use of a three-year phase-in causes a forecast under-recovery of fixed charge revenue of approximately \$96K in 2012 and this amount must be recovered from volumetric sewer rates. RFC's proposed 2012 sewer monthly fixed charges are based on this revised rate design are shown in Table 9-3. As shown in Table 9-3, the variability in 2012 percentage increases has been significantly reduced. The existing 60% differential between inside city and outside city sewer monthly fixed charges has been maintained.

Table 9-3 Revised Calculation of the 2012 Sewer Monthly Fixed Charge Rate Design							
Meter Size	Billing Component	AWWA Meter Flow Equiv. as Adjusted	Capacity Component	Proposed 2012 Monthly Fixed Charge	Existing 2011 Monthly Fixed Charge	% Increase	\$ Increase
Inside City - Fixed Charge							
5/8"	\$2.20	1.00	\$3.69	\$5.89	\$5.13	14.81%	\$0.76
3/4"	\$2.20	1.00	\$4.05	\$6.25	\$5.61	11.41%	\$0.64
1"	\$2.20	1.00	\$5.13	\$7.33	\$7.11	3.09%	\$0.22
1-1/2"	\$2.20	2.00	\$8.13	\$10.33	\$9.22	12.04%	\$1.11
2"	\$2.20	3.20	\$13.95	\$16.15	\$14.81	9.05%	\$1.34
3"	\$2.20	7.00	\$54.00	\$56.20	\$56.20	0.00%	\$0.00
4"	\$2.20	12.00	\$69.28	\$71.48	\$71.48	0.00%	\$0.00
6"	\$2.20	25.00	\$112.79	\$114.99	\$107.26	7.21%	\$7.73
8"	\$2.20	36.00	\$158.93	\$161.13	\$148.09	8.81%	\$13.04
10"	\$2.20	58.00	\$207.40	\$209.60	\$173.65	20.70%	\$35.95
12"	\$2.20	86.00	\$285.32	\$287.52	\$229.83	25.10%	\$57.69
Outside City - Fixed Charge							
5/8"	----	----	----	\$9.43	\$8.20	15.00%	\$1.23
3/4"	----	----	----	\$10.00	\$8.98	11.36%	\$1.02
1"	----	----	----	\$11.73	\$11.38	3.08%	\$0.35
1-1/2"	----	----	----	\$16.53	\$14.76	11.99%	\$1.77
2"	----	----	----	\$25.84	\$23.69	9.08%	\$2.15
3"	----	----	----	\$89.92	\$89.91	0.01%	\$0.01
4"	----	----	----	\$114.37	\$114.36	0.01%	\$0.01
6"	----	----	----	\$183.99	\$171.62	7.21%	\$12.37
8"	----	----	----	\$257.81	\$236.95	8.80%	\$20.86
10"	----	----	----	\$335.36	\$277.84	20.70%	\$57.52
12"	----	----	----	\$460.04	\$367.73	25.10%	\$92.31

Table 9-4 shows existing, proposed, and forecast sewer monthly fixed charges for the period 2011 - 2016.

Table 9-4
2011 - 2016 Existing, Proposed and Forecast Sewer Monthly Fixed Charges

Meter Size	Monthly Charge per Bill						Annual Percentage Increases				
	Existing 2011	Proposed 2012	Forecast				Proposed 2012	Forecast			
			2013	2014	2015	2016		2013	2014	2015	2016
Inside City											
5/8"	\$5.13	\$5.89	\$6.76	\$7.76	\$8.20	\$8.61	14.8%	14.8%	14.8%	5.7%	5.0%
3/4"	\$5.61	\$6.25	\$6.96	\$7.75	\$8.20	\$8.61	11.4%	11.4%	11.4%	5.8%	5.0%
1"	\$7.11	\$7.33	\$7.55	\$7.78	\$8.20	\$8.61	3.1%	3.0%	3.0%	5.4%	5.0%
1-1/2"	\$9.22	\$10.33	\$11.57	\$12.96	\$13.71	\$14.39	12.0%	12.0%	12.0%	5.8%	5.0%
2"	\$14.81	\$16.15	\$17.61	\$19.20	\$20.32	\$21.33	9.0%	9.0%	9.0%	5.8%	5.0%
3"	\$56.20	\$56.20	\$56.20	\$56.20	\$56.20	\$56.20	0.0%	0.0%	0.0%	0.0%	0.0%
4"	\$71.48	\$71.48	\$71.48	\$71.48	\$71.48	\$72.21	0.0%	0.0%	0.0%	0.0%	1.0%
6"	\$107.26	\$114.99	\$123.27	\$132.15	\$140.41	\$147.37	7.2%	7.2%	7.2%	6.3%	5.0%
8"	\$148.09	\$161.13	\$175.31	\$190.74	\$201.00	\$210.97	8.8%	8.8%	8.8%	5.4%	5.0%
10"	\$173.65	\$209.60	\$252.99	\$305.36	\$322.19	\$338.16	20.7%	20.7%	20.7%	5.5%	5.0%
12"	\$229.83	\$287.52	\$359.69	\$449.98	\$476.43	\$500.05	25.1%	25.1%	25.1%	5.9%	5.0%
Outside City											
5/8"	\$8.20	\$9.43	\$10.82	\$12.42	\$13.12	\$13.78	15.0%	14.7%	14.8%	5.6%	5.0%
3/4"	\$8.98	\$10.00	\$11.14	\$12.40	\$13.12	\$13.78	11.4%	11.4%	11.3%	5.8%	5.0%
1"	\$11.38	\$11.73	\$12.08	\$12.45	\$13.12	\$13.78	3.1%	3.0%	3.1%	5.4%	5.0%
1-1/2"	\$14.76	\$16.53	\$18.52	\$20.74	\$21.94	\$23.03	12.0%	12.0%	12.0%	5.8%	5.0%
2"	\$23.69	\$25.84	\$28.18	\$30.72	\$32.52	\$34.13	9.1%	9.1%	9.0%	5.9%	5.0%
3"	\$89.91	\$89.92	\$89.92	\$89.92	\$89.92	\$89.92	0.0%	0.0%	0.0%	0.0%	0.0%
4"	\$114.36	\$114.37	\$114.37	\$114.37	\$114.37	\$115.54	0.0%	0.0%	0.0%	0.0%	1.0%
6"	\$171.62	\$183.99	\$197.24	\$211.44	\$224.66	\$235.80	7.2%	7.2%	7.2%	6.3%	5.0%
8"	\$236.95	\$257.81	\$280.50	\$305.19	\$321.60	\$337.56	8.8%	8.8%	8.8%	5.4%	5.0%
10"	\$277.84	\$335.36	\$404.79	\$488.58	\$515.51	\$541.06	20.7%	20.7%	20.7%	5.5%	5.0%
12"	\$367.73	\$460.04	\$575.51	\$719.97	\$762.29	\$800.08	25.1%	25.1%	25.1%	5.9%	5.0%

9.3 Volumetric Rate Design - Inside City vs. Outside City Rate Differential

Existing 2011 volumetric sewer rates for outside city customers are 60% higher than inside city rates. After consultation with City staff, RFC elected to retain this existing differential for proposed 2012, and forecast 2013 - 2016, volumetric sewer rates.

9.4 Volumetric Rate Design - Multi-Year Phase-In to Full Cost Rates for Selected Customer Rate Classes

Based on the results of the cost of service study process, wholesale sewer customers would see an approximate 20% volumetric increase. As a result, full cost volumetric sewer rates for wholesale customers were designed to be phased-in over a four-year period

9.5 Proposed 2012 Volumetric Rates and Monthly Flat Rates

Table 9-5 shows existing, proposed, and forecast volumetric sewer rates and monthly flat rates for the period 2011 - 2016.

9.6 Proposed 2012 Extra Strength Surcharges

The sewer utility has approximately eighteen customers who pay extra strength surcharges because their wastewater discharges exceed specific strength limitations related to BOD, TSS, or oil and grease. The extra strength surcharges for BOD and TSS are based on the unit cost of service calculated in the cost of service study (see Table 8-9). However, because the calculated 2012 increase in TSS extra strength surcharges was approximately 96%, RFC's rate design features the use of an eight-year phase-in to full cost TSS extra strength surcharges. The percentage increase in 2012 oil and grease extra strength surcharges is based on the average percentage increase in BOD and TSS extra strength surcharges phased-in to full cost over an approximate five-year period. Table 9-6 shows existing, proposed, and forecast extra strength surcharges for the period 2011 - 2016.

Table 9-5
2011 - 2016 Existing, Proposed and Forecast Sewer Volumetric Rates and Monthly Flat Charges

Customer Class	Volumetric Rates						Annual Percentage Increases				
	Existing 2011	Proposed 2012	Forecast 2013	Forecast 2014	Forecast 2015	Forecast 2016	Proposed 2012	Forecast 2013	Forecast 2014	Forecast 2015	Forecast 2016
Volumetric											
Inside City	\$2.47	\$2.70	\$2.91	\$3.09	\$3.28	\$3.45	9.31%	7.78%	6.19%	6.15%	5.18%
Outside City	\$3.96	\$4.32	\$4.66	\$4.95	\$5.25	\$5.52	9.09%	7.87%	6.22%	6.06%	5.14%
Wholesale	\$1.81	\$1.99	\$2.17	\$2.39	\$2.65	\$2.80	9.94%	9.05%	10.14%	10.88%	5.66%
Flat Rate											
Inside City	\$22.34	\$22.34	\$22.34	\$22.34	\$22.34	\$22.34	0.00%	0.00%	0.00%	0.00%	0.00%
Outside City	\$35.75	\$35.75	\$35.75	\$35.75	\$35.75	\$35.75	0.00%	0.00%	0.00%	0.00%	0.00%

Table 9-6
2011 - 2016 Existing, Proposed and Forecast Sewer Extra Strength Surcharges

Customer Class	Volumetric Rates						Annual Percentage Increases				
	Existing 2011	Proposed 2012	Forecast 2013	Forecast 2014	Forecast 2015	Forecast 2016	Proposed 2012	Forecast 2013	Forecast 2014	Forecast 2015	Forecast 2016
Inside Extra Strength											
BOD	\$0.1627	\$0.1744	\$0.1883	\$0.2015	\$0.2136	\$0.2243	7.18%	8.00%	7.00%	6.00%	5.00%
TSS	\$0.1083	\$0.1213	\$0.1368	\$0.1549	\$0.1760	\$0.2003	12.02%	12.73%	13.25%	13.60%	13.82%
OG	\$2.1113	2.353753	2.629945	2.964531	3.400043	3.879208	11.48%	11.73%	12.72%	14.69%	14.09%
Outside Extra Strength											
BOD	\$0.2603	\$0.2790	\$0.3013	\$0.3224	\$0.3418	\$0.3589	7.19%	8.00%	7.00%	6.00%	5.00%
TSS	\$0.1733	\$0.1941	\$0.2188	\$0.2478	\$0.2815	\$0.3205	12.01%	12.73%	13.25%	13.60%	13.82%
OG	\$3.3782	\$3.7660	\$4.2079	\$4.7432	\$5.4401	\$6.2067	11.48%	11.73%	12.72%	14.69%	14.09%

Section 10: Sewer Utility Customer Bill Impacts

Table 10-1 shows the estimated bill impacts of the proposed 2012 sewer rates for an inside city residential customer with 1" water meter.

Table 10-1 Estimated 2012 Sewer Bill Impacts for a Residential Customer with a 1" Meter					
Actual Monthly Consumption	Winter Average Consumption	2011 Total Monthly Sewer Bill	2012 Total Monthly Sewer Bill	2012 \$ Increase	2012 % Increase
1,000	1,000	\$9.58	\$10.03	\$0.45	4.70%
1,500	1,500	\$10.82	\$11.38	\$0.57	5.22%
2,000	2,000	\$12.05	\$12.73	\$0.68	5.64%
2,500	2,500	\$13.29	\$14.08	\$0.80	5.98%
3,000	3,000	\$14.52	\$15.43	\$0.91	6.27%
3,500	3,500	\$15.76	\$16.78	\$1.03	6.51%
4,000	4,000	\$16.99	\$18.13	\$1.14	6.71%
4,500	4,500	\$18.23	\$19.48	\$1.26	6.89%
5,000	5,000	\$19.46	\$20.83	\$1.37	7.04%
5,500	5,500	\$20.70	\$22.18	\$1.49	7.18%
6,000	6,000	\$21.93	\$23.53	\$1.60	7.30%
6,500	6,000	\$21.93	\$23.53	\$1.60	7.30%
7,000	6,000	\$21.93	\$23.53	\$1.60	7.30%
7,500	6,000	\$21.93	\$23.53	\$1.60	7.30%
8,000	6,000	\$21.93	\$23.53	\$1.60	7.30%
8,500	6,000	\$21.93	\$23.53	\$1.60	7.30%
9,000	6,000	\$21.93	\$23.53	\$1.60	7.30%
9,500	6,000	\$21.93	\$23.53	\$1.60	7.30%
10,000	6,000	\$21.93	\$23.53	\$1.60	7.30%
10,500	6,000	\$21.93	\$23.53	\$1.60	7.30%
11,000	6,000	\$21.93	\$23.53	\$1.60	7.30%
11,500	6,000	\$21.93	\$23.53	\$1.60	7.30%
12,000	6,000	\$21.93	\$23.53	\$1.60	7.30%
12,500	6,000	\$21.93	\$23.53	\$1.60	7.30%
13,000	6,000	\$21.93	\$23.53	\$1.60	7.30%
13,500	6,000	\$21.93	\$23.53	\$1.60	7.30%
14,000	6,000	\$21.93	\$23.53	\$1.60	7.30%
14,500	6,000	\$21.93	\$23.53	\$1.60	7.30%
15,000	6,000	\$21.93	\$23.53	\$1.60	7.30%
15,500	6,000	\$21.93	\$23.53	\$1.60	7.30%
16,000	6,000	\$21.93	\$23.53	\$1.60	7.30%
16,500	6,000	\$21.93	\$23.53	\$1.60	7.30%
17,000	6,000	\$21.93	\$23.53	\$1.60	7.30%
17,500	6,000	\$21.93	\$23.53	\$1.60	7.30%
18,000	6,000	\$21.93	\$23.53	\$1.60	7.30%
18,500	6,000	\$21.93	\$23.53	\$1.60	7.30%
19,000	6,000	\$21.93	\$23.53	\$1.60	7.30%
19,500	6,000	\$21.93	\$23.53	\$1.60	7.30%
22,500	6,000	\$21.93	\$23.53	\$1.60	7.30%

Table 10-2 shows the estimated bill impacts of the proposed 2012 sewer rates for an inside city commercial customer with a 2" meter.

Table 10.2 Estimated 2012 Sewer Bill Impacts for a Commercial Customer with a 2" Meter					
Actual Monthly Consumption	Winter Average Consumption	2011 Total Monthly Sewer Bill	2012 Total Monthly Sewer Bill	2012 \$ Increase	2012 % Increase
100,000	100,000	\$261.81	\$286.15	\$24.34	9.30%
500,000	500,000	\$1,249.81	\$1,366.15	\$116.34	9.31%
1,000,000	1,000,000	\$2,484.81	\$2,716.15	\$231.34	9.31%
1,500,000	1,500,000	\$3,719.81	\$4,066.15	\$346.34	9.31%
2,000,000	2,000,000	\$4,954.81	\$5,416.15	\$461.34	9.31%
2,500,000	2,500,000	\$6,189.81	\$6,766.15	\$576.34	9.31%
3,000,000	3,000,000	\$7,424.81	\$8,116.15	\$691.34	9.31%
3,500,000	3,500,000	\$8,659.81	\$9,466.15	\$806.34	9.31%
4,000,000	4,000,000	\$9,894.81	\$10,816.15	\$921.34	9.31%
4,500,000	4,500,000	\$11,129.81	\$12,166.15	\$1,036.34	9.31%
5,000,000	5,000,000	\$12,364.81	\$13,516.15	\$1,151.34	9.31%
5,500,000	5,500,000	\$13,599.81	\$14,866.15	\$1,266.34	9.31%
6,000,000	6,000,000	\$14,834.81	\$16,216.15	\$1,381.34	9.31%
6,500,000	6,500,000	\$16,069.81	\$17,566.15	\$1,496.34	9.31%
7,000,000	7,000,000	\$17,304.81	\$18,916.15	\$1,611.34	9.31%
7,500,000	7,500,000	\$18,539.81	\$20,266.15	\$1,726.34	9.31%
8,000,000	8,000,000	\$19,774.81	\$21,616.15	\$1,841.34	9.31%
8,500,000	8,500,000	\$21,009.81	\$22,966.15	\$1,956.34	9.31%
9,000,000	9,000,000	\$22,244.81	\$24,316.15	\$2,071.34	9.31%
9,500,000	9,500,000	\$23,479.81	\$25,666.15	\$2,186.34	9.31%
10,000,000	10,000,000	\$24,714.81	\$27,016.15	\$2,301.34	9.31%
10,500,000	10,500,000	\$25,949.81	\$28,366.15	\$2,416.34	9.31%
11,000,000	11,000,000	\$27,184.81	\$29,716.15	\$2,531.34	9.31%
11,500,000	11,500,000	\$28,419.81	\$31,066.15	\$2,646.34	9.31%
12,000,000	12,000,000	\$29,654.81	\$32,416.15	\$2,761.34	9.31%
12,500,000	12,500,000	\$30,889.81	\$33,766.15	\$2,876.34	9.31%
13,000,000	13,000,000	\$32,124.81	\$35,116.15	\$2,991.34	9.31%
13,500,000	13,500,000	\$33,359.81	\$36,466.15	\$3,106.34	9.31%
14,000,000	14,000,000	\$34,594.81	\$37,816.15	\$3,221.34	9.31%
14,500,000	14,500,000	\$35,829.81	\$39,166.15	\$3,336.34	9.31%
15,000,000	15,000,000	\$37,064.81	\$40,516.15	\$3,451.34	9.31%
15,500,000	15,500,000	\$38,299.81	\$41,866.15	\$3,566.34	9.31%
16,000,000	16,000,000	\$39,534.81	\$43,216.15	\$3,681.34	9.31%
16,500,000	16,500,000	\$40,769.81	\$44,566.15	\$3,796.34	9.31%
17,000,000	17,000,000	\$42,004.81	\$45,916.15	\$3,911.34	9.31%
17,500,000	17,500,000	\$43,239.81	\$47,266.15	\$4,026.34	9.31%
18,000,000	18,000,000	\$44,474.81	\$48,616.15	\$4,141.34	9.31%
18,500,000	18,500,000	\$45,709.81	\$49,966.15	\$4,256.34	9.31%
19,000,000	19,000,000	\$46,944.81	\$51,316.15	\$4,371.34	9.31%

Residential and commercial customer water bill impacts are provided in Section 5 of this report. Combined water and sewer bill impacts are provided in Section 11.

Section 11: Combined Water and Sewer Utility Bill Impacts

Table 11-1 shows the estimated combined water and sewer bill impacts of the proposed 2012 water and sewer rates for an inside city residential customer with 1" water meter.

Table 11-1 Estimated 2012 Combined Water and Sewer Bill Impacts for a Residential Customer with a 1" Meter					
Actual Monthly Consumption	Winter Average Consumption	2011 Total Monthly Combined Bill	2012 Total Monthly Combined Bill	2012 \$ Increase	2012 % Increase
1,000	1,000	\$22.50	\$23.04	\$0.54	2.40%
1,500	1,500	\$24.45	\$25.15	\$0.70	2.86%
2,000	2,000	\$26.40	\$27.26	\$0.86	3.26%
2,500	2,500	\$28.35	\$29.37	\$1.02	3.60%
3,000	3,000	\$30.30	\$31.48	\$1.18	3.89%
3,500	3,500	\$32.25	\$33.59	\$1.34	4.16%
4,000	4,000	\$34.20	\$35.70	\$1.50	4.39%
4,500	4,500	\$36.15	\$37.81	\$1.66	4.59%
5,000	5,000	\$38.10	\$39.92	\$1.82	4.78%
5,500	5,500	\$40.05	\$42.03	\$1.98	4.94%
6,000	6,000	\$42.00	\$44.14	\$2.14	5.10%
6,500	6,000	\$42.72	\$44.90	\$2.19	5.12%
7,000	6,000	\$45.03	\$47.25	\$2.22	4.93%
7,500	6,000	\$47.74	\$49.99	\$2.26	4.73%
8,000	6,000	\$50.45	\$52.74	\$2.29	4.54%
8,500	6,000	\$53.16	\$55.48	\$2.33	4.38%
9,000	6,000	\$55.87	\$58.23	\$2.36	4.23%
9,500	6,000	\$58.58	\$60.97	\$2.40	4.09%
10,000	6,000	\$61.29	\$63.72	\$2.43	3.97%
10,500	6,000	\$64.00	\$66.46	\$2.47	3.85%
11,000	6,000	\$66.71	\$69.21	\$2.50	3.75%
11,500	6,000	\$69.42	\$71.95	\$2.54	3.65%
12,000	6,000	\$72.13	\$74.70	\$2.57	3.57%
12,500	6,000	\$74.84	\$77.44	\$2.61	3.48%
13,000	6,000	\$77.55	\$80.19	\$2.64	3.41%
13,500	6,000	\$80.26	\$82.93	\$2.68	3.34%
14,000	6,000	\$82.97	\$85.68	\$2.71	3.27%
14,500	6,000	\$85.68	\$88.42	\$2.75	3.21%
15,000	6,000	\$88.39	\$91.17	\$2.78	3.15%
15,500	6,000	\$91.10	\$93.91	\$2.82	3.09%
16,000	6,000	\$93.81	\$96.66	\$2.85	3.04%
16,500	6,000	\$96.52	\$99.40	\$2.89	2.99%
17,000	6,000	\$99.23	\$102.15	\$2.92	2.94%
17,500	6,000	\$101.94	\$104.89	\$2.96	2.90%
18,000	6,000	\$104.65	\$107.64	\$2.99	2.86%
18,500	6,000	\$107.36	\$110.38	\$3.03	2.82%
19,000	6,000	\$111.16	\$114.25	\$3.09	2.78%
19,500	6,000	\$115.23	\$118.39	\$3.16	2.74%
22,500	6,000	\$139.68	\$143.26	\$3.58	2.56%

Table 11-2 shows the estimated combined water and sewer bill impacts of the proposed 2012 water and sewer rates for an inside city commercial customer with 2" water meter.

Table 11-1 Estimated 2012 Combined Water and Sewer Bill Impacts for a Commercial Customer with a 2" Meter					
Actual Monthly Consumption	Winter Average Consumption	2011 Total Monthly Combed Bill	2012 Total Monthly Combined Bill	2012 \$ Increase	2012 % Increase
100,000	100,000	\$417.49	\$452.13	\$34.64	8.30%
500,000	500,000	\$1,977.49	\$2,140.13	\$162.64	8.22%
1,000,000	1,000,000	\$3,927.49	\$4,250.13	\$322.64	8.21%
1,500,000	1,500,000	\$5,877.49	\$6,360.13	\$482.64	8.21%
2,000,000	2,000,000	\$7,827.49	\$8,470.13	\$642.64	8.21%
2,500,000	2,500,000	\$9,777.49	\$10,580.13	\$802.64	8.21%
3,000,000	3,000,000	\$11,727.49	\$12,690.13	\$962.64	8.21%
3,500,000	3,500,000	\$13,677.49	\$14,800.13	\$1,122.64	8.21%
4,000,000	4,000,000	\$15,627.49	\$16,910.13	\$1,282.64	8.21%
4,500,000	4,500,000	\$17,577.49	\$19,020.13	\$1,442.64	8.21%
5,000,000	5,000,000	\$19,527.49	\$21,130.13	\$1,602.64	8.21%
5,500,000	5,500,000	\$21,477.49	\$23,240.13	\$1,762.64	8.21%
6,000,000	6,000,000	\$23,427.49	\$25,350.13	\$1,922.64	8.21%
6,500,000	6,500,000	\$25,377.49	\$27,460.13	\$2,082.64	8.21%
7,000,000	7,000,000	\$27,327.49	\$29,570.13	\$2,242.64	8.21%
7,500,000	7,500,000	\$29,277.49	\$31,680.13	\$2,402.64	8.21%
8,000,000	8,000,000	\$31,227.49	\$33,790.13	\$2,562.64	8.21%
8,500,000	8,500,000	\$33,177.49	\$35,900.13	\$2,722.64	8.21%
9,000,000	9,000,000	\$35,127.49	\$38,010.13	\$2,882.64	8.21%
9,500,000	9,500,000	\$37,077.49	\$40,120.13	\$3,042.64	8.21%
10,000,000	10,000,000	\$39,027.49	\$42,230.13	\$3,202.64	8.21%
10,500,000	10,500,000	\$40,977.49	\$44,340.13	\$3,362.64	8.21%
11,000,000	11,000,000	\$42,927.49	\$46,450.13	\$3,522.64	8.21%
11,500,000	11,500,000	\$44,877.49	\$48,560.13	\$3,682.64	8.21%
12,000,000	12,000,000	\$46,827.49	\$50,670.13	\$3,842.64	8.21%
12,500,000	12,500,000	\$48,777.49	\$52,780.13	\$4,002.64	8.21%
13,000,000	13,000,000	\$50,727.49	\$54,890.13	\$4,162.64	8.21%
13,500,000	13,500,000	\$52,677.49	\$57,000.13	\$4,322.64	8.21%
14,000,000	14,000,000	\$54,627.49	\$59,110.13	\$4,482.64	8.21%
14,500,000	14,500,000	\$56,577.49	\$61,220.13	\$4,642.64	8.21%
15,000,000	15,000,000	\$58,527.49	\$63,330.13	\$4,802.64	8.21%
15,500,000	15,500,000	\$60,477.49	\$65,440.13	\$4,962.64	8.21%
16,000,000	16,000,000	\$62,427.49	\$67,550.13	\$5,122.64	8.21%
16,500,000	16,500,000	\$64,377.49	\$69,660.13	\$5,282.64	8.21%
17,000,000	17,000,000	\$66,327.49	\$71,770.13	\$5,442.64	8.21%
17,500,000	17,500,000	\$68,277.49	\$73,880.13	\$5,602.64	8.21%
18,000,000	18,000,000	\$70,227.49	\$75,990.13	\$5,762.64	8.21%
18,500,000	18,500,000	\$72,177.49	\$78,100.13	\$5,922.64	8.21%
19,000,000	19,000,000	\$74,127.49	\$80,210.13	\$6,082.64	8.21%

Residential and commercial customer water utility bill impacts are provided in Section 5 of this report. Residential and commercial customer sewer bill impacts are provided in Section 10.

Section 12: Combined Water and Sewer Utility Overall Rate Revenue Increases

Table 12-1 shows a forecast of the overall increases in water and sewer rate revenues developed as part of the water and sewer utility financial planning process. As discussed in previous sections of this report, the overall rate revenue increases shown in Table 12-1 do not necessarily reflect the actual percentage bill increase that will be experienced by individual customers.

Table 12-1 Forecast Combined Overall Water and Sewer Rate Revenue Increases 2011 - 2021 (\$ Thousands)											
Metrics	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Forecast Water Rate Revenues	66,164.5	69,218.5	73,106.5	79,416.0	86,268.7	93,713.7	99,911.3	105,513.6	111,426.2	116,545.5	120,726.4
Forecast Sewer Rate Revenues	<u>39,902.9</u>	<u>43,630.2</u>	<u>47,266.9</u>	<u>50,732.2</u>	<u>53,945.0</u>	<u>56,821.6</u>	<u>59,851.4</u>	<u>63,039.2</u>	<u>66,398.5</u>	<u>69,935.8</u>	<u>73,310.1</u>
Total Forecast Combined Revenue	\$106,067.3	\$112,848.6	\$120,373.4	\$130,148.2	\$140,213.7	\$150,535.3	\$159,762.7	\$168,552.7	\$177,824.7	\$186,481.3	\$194,036.5
% of Total Revenues Associated with Water	62.38%	61.34%	60.73%	61.02%	61.53%	62.25%	62.54%	62.60%	62.66%	62.50%	62.22%
% of Total Revenues Associated with Sewer	<u>37.62%</u>	<u>38.66%</u>	<u>39.27%</u>	<u>38.98%</u>	<u>38.47%</u>	<u>37.75%</u>	<u>37.46%</u>	<u>37.40%</u>	<u>37.34%</u>	<u>37.50%</u>	<u>37.78%</u>
% Total Revenues	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Water Overall Rate Revenue Increases	----	2.45%	3.04%	4.88%	4.92%	4.98%	3.75%	3.13%	3.13%	2.50%	1.87%
Sewer Overall Rate Revenue Increases	----	3.48%	3.14%	2.73%	2.31%	1.89%	1.87%	1.87%	1.87%	1.88%	1.70%
Weighted Overall Combined Rate Rev. Increase	----	5.93%	6.18%	7.61%	7.23%	6.87%	5.63%	5.00%	5.00%	4.38%	3.57%

Section 13: Combined Water and Sewer Utility Debt Service Coverage Ratios

As discussed previously, the City issues revenue bond debt to fund water and sewer utility capital improvements on a combined utility basis. As a result, compliance with the revenue bond debt service coverage requirements is also measured on a combined, Water Utility Fund and Sewer Utility Fund basis. The minimum revenue bond debt service coverage ratio necessary to maintain compliance with revenue bond covenants is 1.20.

Table 13-1 presents a forecast of combined Water and Sewer Utility Fund debt service coverage ratios over the period 2011 - 2021 based on the results of the financial planning, cost of service and rate design analyses discussed in this report. The specific methodology used to calculate compliance with revenue bond covenants was based on guidance obtained from City staff. In all years, a minimum combined revenue bond coverage ratio higher than 1.20 is forecast. Also provided in Table 13.1 is a forecast of combined debt service coverage ratios for both revenue bond and general obligation debt.

Table 13-1
Forecast Combined Water and Sewer Utility Debt Service Coverage Ratios 2011 - 2021 (\$ Thousands)

Metrics	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Water Utility											
Revenues - Total Water Related	70,241.0	73,329.7	77,223.0	83,537.8	90,395.8	97,846.1	104,049.1	109,656.7	115,574.6	120,699.3	124,885.6
Net O&M Expenditures for DSCR Calculation	<u>25,800.9</u>	<u>27,674.7</u>	<u>28,875.5</u>	<u>29,911.5</u>	<u>31,114.5</u>	<u>32,379.7</u>	<u>33,711.3</u>	<u>35,007.3</u>	<u>36,306.2</u>	<u>37,660.7</u>	<u>39,174.7</u>
Net Revenues Available for DSCR Calculation	\$44,440.1	\$45,655.0	\$48,347.5	\$53,626.3	\$59,281.3	\$65,466.4	\$70,337.7	\$74,649.3	\$79,268.4	\$83,038.7	\$85,711.0
 Total Revenue Bond Debt Service	\$25,389.5	\$26,348.0	\$28,093.0	\$31,055.5	\$33,457.9	\$35,374.9	\$35,466.3	\$40,446.1	\$43,515.5	\$44,865.1	\$46,182.1
Calculated DSCR - Revenue Bonds	1.75	1.73	1.72	1.73	1.77	1.85	1.98	1.85	1.82	1.85	1.86
 Total Revenue Bond and GO Debt Service	\$26,374.7	\$27,688.5	\$29,433.5	\$32,396.0	\$38,582.9	\$51,824.6	\$51,916.0	\$56,895.8	\$59,965.2	\$61,314.8	\$62,631.9
Calculated DSCR - Revenue Bonds & GO Debt	1.68	1.65	1.64	1.66	1.54	1.26	1.35	1.31	1.32	1.35	1.37
Sewer Utility											
Revenues - Total Sewer Related	43,109.3	46,973.7	50,616.0	54,086.9	57,305.3	60,187.5	63,223.0	66,416.4	69,781.5	73,324.4	76,704.4
Net O&M Expenditures for DSCR Calculation	<u>21,784.3</u>	<u>22,663.7</u>	<u>23,618.9</u>	<u>24,531.6</u>	<u>25,462.1</u>	<u>26,407.2</u>	<u>27,363.6</u>	<u>28,360.3</u>	<u>29,399.1</u>	<u>30,482.6</u>	<u>31,670.0</u>
Net Revenues Available for DSCR Calculation	\$21,325.1	\$24,310.0	\$26,997.1	\$29,555.3	\$31,843.1	\$33,780.3	\$35,859.4	\$38,056.1	\$40,382.3	\$42,841.8	\$45,034.5
 Total Revenue Bond Debt Service	\$19,175.2	\$21,469.5	\$22,315.1	\$23,506.7	\$24,389.5	\$25,213.9	\$23,438.8	\$24,246.6	\$23,855.9	\$23,688.2	\$23,837.9
Calculated DSCR - Revenue Bonds	1.11	1.13	1.21	1.26	1.31	1.34	1.53	1.57	1.69	1.81	1.89
 Total Revenue Bond and GO Debt Service	19,175.2	21,469.5	22,315.1	23,506.7	24,619.0	26,040.6	25,019.2	26,823.6	28,253.5	31,247.3	33,718.5
Calculated DSCR - Revenue Bonds & GO Debt	1.11	1.13	1.21	1.26	1.29	1.30	1.43	1.42	1.43	1.37	1.34
Combined Water and Sewer Utility											
Combined Revenue	113,350.3	120,303.4	127,839.0	137,624.7	147,701.1	158,033.6	167,272.0	176,073.1	185,356.1	194,023.7	201,590.1
Combined Net O&M Expenditures for DSCR	<u>47,585.1</u>	<u>50,338.4</u>	<u>52,494.5</u>	<u>54,443.1</u>	<u>56,576.6</u>	<u>58,786.9</u>	<u>61,074.9</u>	<u>63,367.6</u>	<u>65,705.3</u>	<u>68,143.3</u>	<u>70,844.6</u>
Combined Net Revenues for DSCR Calculation	\$65,765.2	\$69,965.0	\$75,344.6	\$83,181.6	\$91,124.5	\$99,246.7	\$106,197.1	\$112,705.4	\$119,650.8	\$125,880.5	\$130,745.5
 Combined Total Revenue Bond Debt Service	\$44,564.6	\$47,817.5	\$50,408.0	\$54,562.2	\$57,847.4	\$60,588.8	\$58,905.0	\$64,692.7	\$67,371.4	\$68,553.3	\$70,020.1
Combined Calculated DSCR - Revenue Bonds	1.48	1.46	1.49	1.52	1.58	1.64	1.80	1.74	1.78	1.84	1.87
 Combined Total Revenue Bond & GO Debt Service	\$45,549.9	\$49,158.0	\$51,748.5	\$55,902.7	\$63,201.9	\$77,865.2	\$76,935.2	\$83,719.4	\$88,218.7	\$92,562.1	\$96,350.4
Calculated DSCR - Revenue Bonds & GO Debt	1.44	1.42	1.46	1.49	1.44	1.27	1.38	1.35	1.36	1.36	1.36